NATURE MAGAZINE

FEBRUARY 1929 35¢ VOL. 13, NO. 2

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Organized to Stimulate Public Interest in Every Phase of Nature and the Out-of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

The American Nature Association seeks to find for Nature Study an essential place in every School and in every American Home. It is working for Forest and Wild Life Protection along sane, economic lines. It believes that clean, healthful Out-of-Door Recreation is the key to Good Citizenship

IT MAY be that some decision, one way or the other, will have been made with respect to the harnessing of Cumberland Falls, Kentucky, for power purposes before this issue of the magazine is in circulation. We hope that the cause of those who have been fighting to protect this beautiful natural spot will win. The American Nature Association has been actively at work on the side of protection and was represented at the hearings before the Federal Power Commission urging that Cumberland Falls be preserved.

* * *

On this page in the next issue a summary of the annual report of the President of the American Nature Association, Mr. Arthur Newton Pack, will be presented. This will be separately printed, in full also, and made available to members.

* * *

Enthusiastic reception has been accorded the *Nature and Science Education Review* by educators in the fields of Nature Study and Science. Copies of the second issue will be available by the time this issue of Nature Magazine appears and those who have not yet seen this helpful school publication are invited to write for a sample copy.

* * *

Full report on the National Flower Vote is made elsewhere in this issue but here we would like to reemphasize the desire to make this a real educational force. The vote thus far received has revealed a remarkable interest in the schools and we hope that all adults in a position to do so will further this spirit and spread the word of education of the youngsters to an interest in wild flowers and their protection.

* * *

There are still available for groups interested copies of the bulletin-board poster on Outdoor Good Manners and Billboard Restriction. Copies will be mailed on request. It is time now to begin thinking of the Outdoor Good Manners campaigns for the coming spring and summer seasons.

WHY IT SEEMS ABOUT TIME TO BEGIN TO TALK OF CONSERVATION

A Cartoon by J. N. Darling

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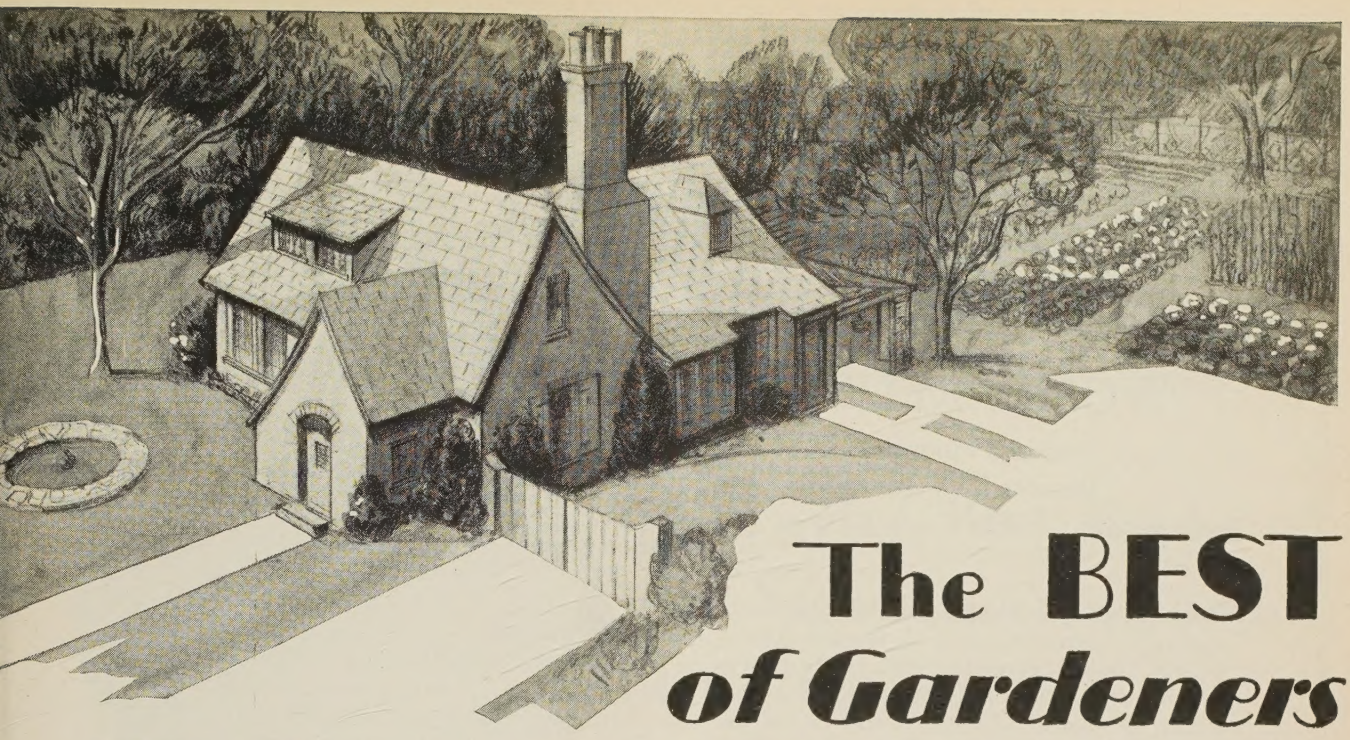

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Gardening grief turns to gardening joy under the auspices of the National Garden Association. You are spared the disappointments of withered vines, plants without fruit and sickly, stunted shrubs. You can assure yourself a successful garden *this* year by taking advantage of this offer at once and by following the advice of the Association through the year.

Mr. Leonard H. Barron F. R. H. S. is president of the Association. As the Horticultural editor of *The American Home* and recognized authority on the latest developments of the field, his advice on all gardening problems is respected by every one. Members of the N. G. A. are entitled to write Mr. Barron at any time for information on gardening questions. In addition members receive each month THE BULLETIN, a publication crammed full of garden facts, tips, hints, advice and the experience of other gardeners.

Co-operating Societies:

Society of American Florists and Ornamental Horticulturists
Society of Little Gardens
Ontario Horticultural Association
American Iris Society
American Dahlia Society
National Plant, Flower and Fruit Guild
Women's National Farm and Garden Association
The Agassiz Association
National Horticultural Association
The School Nature League
American Forestry Association
Wild Flower Preservation Society

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To stimulate interest in gardening and thus *increase the value of property*, the Association wishes to double its membership. To this end it offers one full year's membership absolutely free to every purchaser of "The Garden Library".

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To those who order at once we have arranged to give THE GARDEN LIBRARY at an extremely low price *in addition to a year's free membership in the National Garden Association.* Fill out and mail the coupon today. Keep and read these wonderful books a week. If you decide that you and your garden cannot do without them send only $1.85 first payment and $2.00 a month for four months. Otherwise send them back entirely at our expense. You take no risk. You are the sole judge. And remember that if you keep the books your garden will enjoy the advantage of Mr. Barron's personal interest and advice for one year free.

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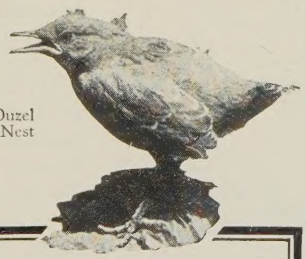
Camera Hunting on the Continental Divide With Thrilling Moving Pictures by WILLIAM L. FINLEY Famous Explorer and Lecturer

who made these remarkable pictures on the two recent Pack-Finley expeditions into the northern part of the Rocky Mountains, under the auspices of the American Nature Association, will lecture with them personally during the season JANUARY 1 TO APRIL 1, 1929

You who have read the story of the expedition, appearing in Nature Magazine for January, February, March, July and September, 1928, will be more than ever eager to see these pictures and hear Mr. Finley. Rocky Mountain Goats—outwitted by the use of a goat disguise, photographed within 50 feet. Moose—that threatened the cameraman, and at one time came too close for his comfort. Beaver—photographed in the wild, cutting branches and building a dam. Bighorn Sheep—high up on the mountain passes. Pronghorn Antelope—photographed from a pursuing automobile travelling at 45 miles an hour. Herd of Elk—fording a river. Bears—raiding the camp. Conies, deer, marmots, ptarmigan, jays, Franklin grouse or fool-hens, and other birds of the high peaks.

Dates for the coming season should be arranged as soon as possible by addressing

EXTENSION DEPARTMENT, AMERICAN NATURE ASSOCIATION
15 BOUDINOT STREET, PRINCETON, N. J.



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During the summer Mr. Caldwell conducts nature camps for boys and for women in the Rocky Mountain National Park, Colo. Ask for folders.

AMERICAN NATURE ASSOCIATION
15 Boudinot St. Princeton, N. J.

Forests and Floods

Indicating that reduction of forest land in the Mississippi basin has been a factor in recent floods, and that the loss of soil by erosion is a serious menace to the valley, the report of the Forest Service on the Mississippi drainage system, which has just been published under the title of *The Protection Forests of the Mississippi Watershed and their Part in Flood Protection,* recommends to Congress among other things co-operative planting programs to reforest "critical lands", and the purchase of several million acres of protection forest lands as national forests. E. A. Sherman, associate forester, who wrote the report, points out that constructive forestry will be only a supplement to engineering, but that since surface land conditions determine how much water will be held, this factor cannot be disregarded.

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CHARLES C. GORST
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CAMERA TROPHIES 1928

Speaking of ADVENTURES

we were bent on taking motion pictures of those wild red foxes 'way over back of farmer Alvord's place, but what a battle of wits we got into! The old lady moved her cubs three times. Twice we were able to follow—then she lost us. Two weeks of work and 180 feet of film—but what films!

Then I perched three hours 60 feet up a sugar maple, concealed under my "magic carpet" blind, and took rarest shot of red-tailed hawk arriving home, mouse dangling from her beak like a princess's earring!

Also this season, up in Nova Scotia, I captured the shy minister gull on my motion picture film, and intimate camera interviews have I had with the osprey.

These *trophies* will be added to the already rich material included in my illustrated platform lecture—***Wild Life Adventures***—a favorite among schools and, I am told, an inspiration to students and teachers alike.

There are other subjects, too, including ***Cruising the Canadian Labrador,*** a pictorial story about the now famous Greenely Island country.

(Note: Fall and early winter will be spent in the east. In January 1929 I go to the middle west.)

Let me send you an illustrated circular.

HOWARD H. CLEAVES
AMERICAN NATURE ASSOCIATION
15 BOUDINOT ST., PRINCETON, N. J.

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The Literary Guild is in constant, intimate contact with the book supply of America. Months before publication the Guild knows what major manuscripts leading publishers plan to issue. Authors and literary agents also submit their books. From the best of all this available material one book is chosen each month. It is printed expressly for the Guild, bound in a distinctive Guild binding of the very best cloth and delivered to members by mail *postpaid,* on the day of publication.

When the booksellers are receiving their regular trade edition, you are receiving the exclusive Guild edition. The retail prices of these books vary through the year, but no matter how much the separate titles cost elsewhere *the subscription price to you remains the same for the entire twelve books.*

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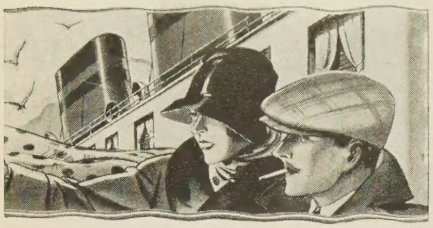

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Travel DEPARTMENT

Many fail to realize that historic Death Valley in southeastern California, lowest dry land in North America, and noted for its torrid summer temperatures, enjoys a delightful climate during winter and early spring—mild and sunny by day and crisply cool at night. Moreover, it is a region of weird and spectacular beauty. The strangely wrinkled foothills flanking its rugged volcanic mountains glow with every color of the spectrum; its tawny floor is silvered with salt flows crystallized into fantastic pinnacles and turrets; while flaming sunsets and fleeting mirages cast over the scene a veil of glory and mystery. There is an excellent modern hotel in the Valley, and combination rail and motorbus tours of its wonders are now being operated by the Union Pacific System in conjunction with the Tonopah & Tidewater Railroad—a two-day side trip en route to California, or a three-day round trip from California. Tours continue until May 1, 1929.

* * *

Announcement is made by the Holland America Line that their "S.S. Statendam" will make her maiden voyage from New York on April 27th. Although full details of the appointments of this steamer have not yet been announced, she will be one of the most luxurious and one of the largest liners afloat. One of her features is the Delft-tiled swimming pool and also a Louis XIV Ballroom, where gorgeous Gobelin tapestries tell a story of old world splendors.

* * *

Catching a live Canada goose on the wing is not the usual running orders given to a railroad engine crew, but when Sam Sliter, engineer of the Canadian National Railways, was taking his freight train into Jasper in the early morning and saw a big bird hovering around his engine, leaving his throttle in charge of the fireman, he stepped out on the running board, and when his feathered quarry swooped down again he grabbed it and returned with it to the cab. It was then that he discovered that what he had taken to be a sandhill crane was really a wild goose distracted from its southern flight by the headlight of the locomotive, which at that early hour was still burning. The goose is now in a chicken pen and Mr. Sliter hopes to keep it through the winter and release it in the spring.

* * *

With the recent announcement that the S.S. RELIANCE will again make a cruise to the Northern Wonderlands next summer, and that various trips will be made by vessels of the line's cruising fleet from Hamburg to the Polar Regions, the number of pleasure cruises scheduled by the

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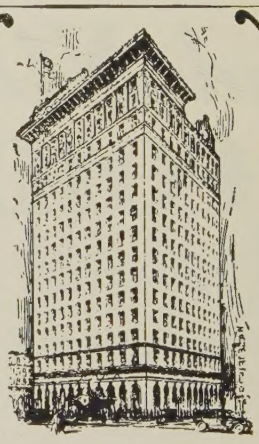
CALIFORNIA'S FOUR-SEASON WONDERLAND



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Hamburg-American Line for 1929 totals twenty. This cruise service covers five general routes—Around the World to the West Indies, to the Mediterranean-Orient, to the Northern Wonderlands and to Baltic Sea Ports. There will be a slight variation in some of the itineraries of cruises arranged to the same parts of the world. The steamers RESOLUTE, RELIANCE, NEW YORK, OCEANA and the motorship ORINOCO are scheduled for cruising service.

* * *

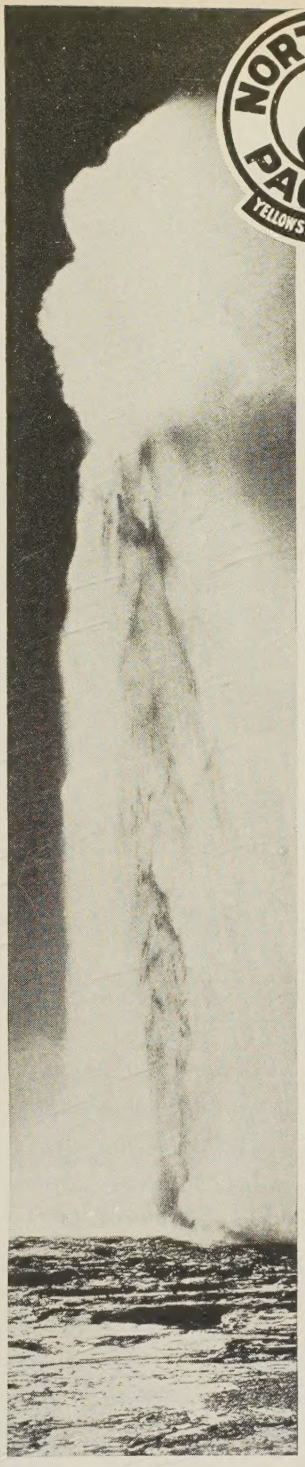
The Merchants & Miners new ships in Winter service to the South are among the largest on the coast. These vessels, built especially for Florida travel, are of the latest Trans-Atlantic type. Luxuriously furnished throughout. Exceptionally comfortable staterooms, with telephone and hot and cold running water in each room. Lounge, social hall, music room, sun-parlor, reception room, writing room, dance floor, three decks. All expense and personally conducted cruises to Florida and Cuba at low cost. Sailings from Baltimore, Philadelphia and Boston to Jacksonville and Miami—connections at Miami for Havana, Cuba.

* * *

The new twin screw 32,830-ton turbo electric liner Virginia of the Panama Pacific Line, the largest steamship ever built in America, which was delivered to her owners following her builders' trials, left New York December 8th on her maiden voyage to San Francisco via the Panama Canal. She is commanded by Captain H. A. T. Candy, senior commander of the line. She is regarded by her builders as the finest merchantman ever fashioned by the Newport News Shipbuilding and Dry Dock Company and has been classed by the American Bureau of Shipping in its highest rating.

* * *

The Black Hills of South Dakota are an all around resort. They may be reached by train from Chicago or Denver or by entirely surfaced roads from Chicago by following the AYP HIWAY. The Alex Johnson hotel at Rapid City, recently completed, is a striking example of the modern in art and furnishing. An Indian motif has been used throughout—developed in delightful colors. It is luxurious, comfortable and furnishes easy excess to every part of the Black Hills.



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☐ Pacific Northwest (Portland, Seattle, Tacoma)	90.30
☐ Rainier Park (Portland, Seattle, Tacoma)	90.30
☐ Alaska (Skagway)	180.30
☐ Burlington Escorted Tours (all-expense)	$140.04 to 239.51
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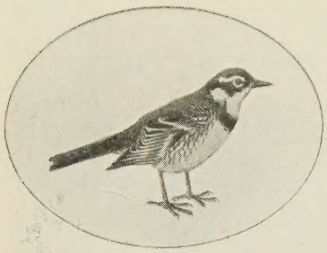
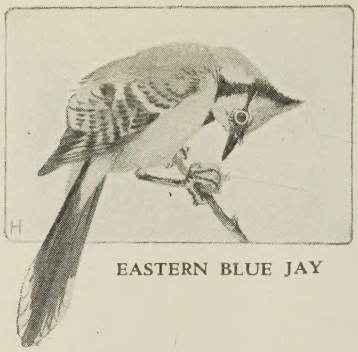
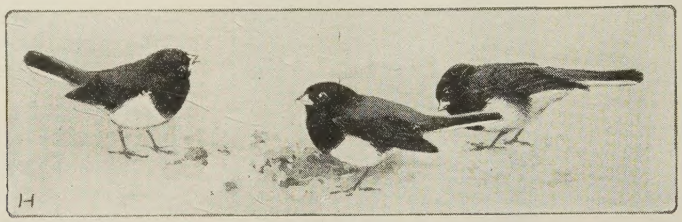


VARIED THRUSH



EASTERN BLUE JAY

THE CHEWINK



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PUBLISHED BY

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February, 1929

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NATURE CALENDAR

FEBRUARY

by E. Laurence Palmer

We think of the month of February as one that is shorter than the other months of the year. In fact, any month of the year may be made short at least a day if we have the time and money to travel around the world. Possibly few of us will ever go around the world in a month. There is too much to see to be in such a hurry. But there will also be few who travel around the world who will take three years to do it as did Drake who was the first Englishman to make the trip. One of the reasons why we who travel go more rapidly than did our ancestors is because locomotives carry us at phenomenal speed over miles of country. In this connection it might be interesting to note that the first locomotive ever to run over rails took its initial trip just one hundred and twenty-five years ago the twenty-second of this February. It was one of the masterpieces of Robert Trevithick, but it would hardly be considered a masterpiece by any engineer of these days. The past is gone.

Trevithick's locomotive was, of course, improved upon greatly; so much so that now we may go South for the winter whenever we have the money and the leisure. Nature is full, in February, of travelers who have been taking north and south journeys through the exercise of their own bodies. Bats of certain species, monarch butterflies, and birds of many kinds have gone to the south of where we live or come to us from the north. Among these birds in the northern United States will be the snow buntings, the juncos, the tree sparrows, the redpolls, pine siskins and snowy owls. In the southern states will be many of the species that spent the summer in the north. A few of the species will be abandoning their winter quarters and moving to the north again and by the end of the month not a few of these will have passed the Canadian border.

Some people may wonder how these early arrivals or winter residents manage to exist during February weather. If you think there is nothing for these birds to live upon, look at the weed tops sticking above the snow or at any number of woody plants that keep their fruits on during the winter. Among these latter might be mentioned Virginia creeper, European barberry, dogwoods, mountain ash, wintergreen, buckthorn, green brier, hackberry, hawthorn, juniper, partridge berry, privet, sumac, bittersweet and red cedar. You may find that different species of birds seem to prefer different kinds of fruits. For example, red cedar fruits seem to prove very attractive to cedar wax-wings and myrtle warblers.

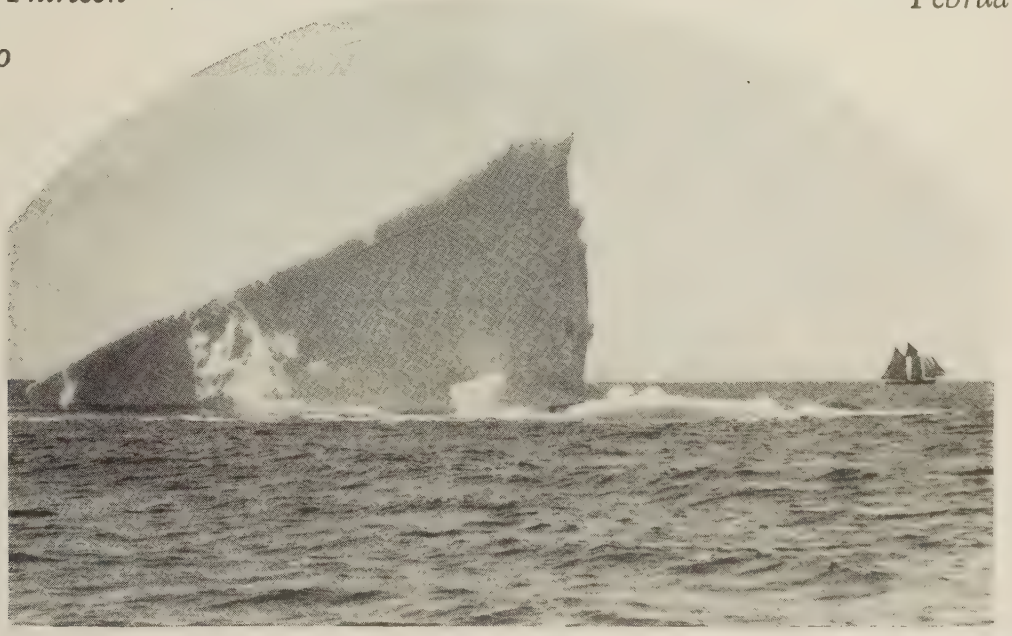
Some of you may prefer to get your Nature experiences in February through the medium of printed pages. If you feel this way it might be interesting to know that ninety-two years ago this February, Froebel opened the first kindergarten in which was advocated a new type of education,—an education divorced from the philosophy of looking to authority for proof instead of looking to proof for authority. He said: "As in a garden growing plants are cultivated in accordance with Nature's laws so here in our child garden shall the noblest of all growing things, men, that is children, the germs and shoots of humanity, be cultivated in accordance with the laws of Nature." Would that all the experiences of children came from realities! The bird in the tree is more interesting than the bird in the book. The broken sassafras and spicebush twigs smell more satisfactorily than do their pictures. The track made by a real rabbit offers a more genuine story than a picture of the track on the blackboard; and no printed phrase can begin to express the love call of the chickadee as we may hear it in February. Why deprive our children, or ourselves for that matter, of the benefits to be gained through studying things instead of the signs of things? Why let the picture of a rabbit fool us into thinking that we are enjoying seeing a rabbit when the same picture doesn't interest our dog who knows it isn't the real thing?

THE AMERICAN EIDER DUCK

NATURE MAGAZINE

Volume Thirteen *February, 1929*

No. Two



RIDERS OF THE NORTHERN DEEP

Symbols of the Northland. Both on sea and land Labrador typifies the cold which breeds virility and hardiness

IN THE LAND of the EIDER

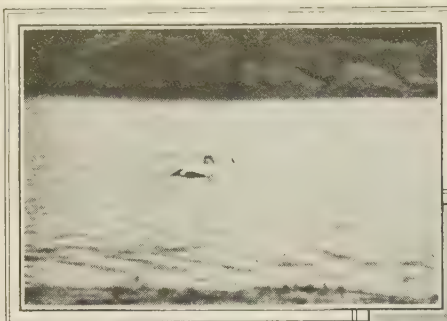
Labrador Yields up its Wild Life Secrets

by Howard H. Cleaves

Photographs by the Author

The old walled city of Quebec, resting imposingly upon its steep terraced slopes surmounted by citadel and the castle-like Chateau Frontenac, soon became small in the distance astern of us as our little steamer, the *Nayarit,* got under full headway down the St. Lawrence. It was the first of June, and a sparklingly clear morning. Our craft was packed with gear and supplies—barrels, lumber, gasoline drums, rope, one automobile and several beef cattle—all to be put off in driblets at the many little fishing villages "on the coast". The auto was destined for Clarke City, situated at one end of a very poor road eighteen miles long and reputed to be the only automobile "highway" on the whole Labrador peninsula. We might have been an Arctic expedition, bustling away from port with duffle and equipment not yet stowed below decks, as Arctic expeditions always do!

One passenger, a man who had served forty-one years as a textile worker at St. André, was retiring to the "north shore" to spend the remainder of his days there. On deck near his stateroom door, stood a crate of live chickens—a self-important little spangled wyandotte rooster, lady wyandotte and four small, red-leghorn hens. Presently there arose a great chorus of cackling. Lady wyandotte had done her duty, surroundings notwithstanding, and her owner, apparently more alert than his fellow passengers, was already on the spot holding in his hand the treasure, almost "hot".



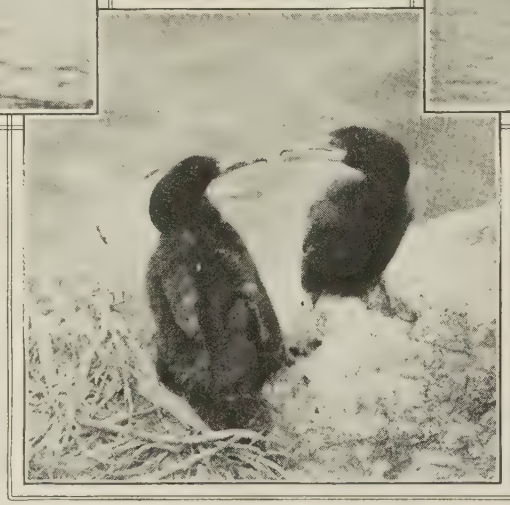
A GAY DRAKE WOULD A-WOOING GO

He bravely swims past the camera blind, a handsome creature. But though a Don Juan, he is not a fond father, for he deserts before his children are born

(Below)

A DUEL OF SAVAGE BEAKS

Members of the rising shag generation clash on the cormorant cliffs



LIKE A BOAT WITH TENDERS IN TOW

Close to the flanks of the mother cling the ducklings, bobbing in her wake. Sometimes the parent "checks" them in the reeds when she makes long journeys

Eggs are scarce in Labrador and this voyager was going prepared.

By late afternoon we were passing the mouth of the Saguenay, but standing well off-shore. In a clear sky the sun was low over the Laurentians, its rays splashing with gold the black headlands guarding the river's mouth. It was a scene of grandeur and promise. "I must go to the Saguenay sometime", I thought.

"Just before dusk," says my diary for this day, "a jaeger swung in behind the steamer and followed for a short time, then veered off, leaving a small company of herring gulls, perhaps to their relief." This was the long-tailed jaeger, the first I had ever seen. Nearly a dozen additional individuals were observed at different times and places in the three months which followed. These pirates among the seabirds dog the tails of the kittiwake gulls in particular in the gulf waters. On one occasion, well down northeast toward the Straits of Belle Isle, I saw two jaegers bringing up the rear of a sizable flock of kittiwakes as methodically as a Mexican sheep herder's dog had followed his charges near our camping place on the Wyoming prairies the previous summer.

My contemplation of distant shore, dancing waves and sea birds was suddenly interrupted by the punctual appearance on deck of the white-coated steward's lieutenant, a smiling Frenchman, proceeding briskly from one quarter of the steamer to another announcing the dinner hour by ringing a hand-bell of the type used at country school houses. Salt air works amazingly upon the appetite.

A motley crowd were we passengers bound for Canadian Labrador. There were fur traders and buyers, a government surveyor and his wife, a Grenfell mission worker, an angler from "the States" going on his annual salmon fish in his favorite river on the North Shore. There were also the young McGill University student returning to his home in far Newfoundland for the summer and the young girl, likewise Newfoundland-bound, who was going back to her little native fishing village after a year of venturing in a large Canadian city.

THE "FLOWER-POT" ROCKS

Found on Quarry Island, in the Mingan Group. They are composed of limestone

Early in the morning of June third we were at Seven Islands, way-station for thousands of migrating brant. Through the porthole of my stateroom I caught sight of many herring gulls against the deep green spruces on one or two of the islands and judged there must be a colony there. At this place I saw my first Montagnais Indians,—a small man wearing low moccasin boots, a squatty woman and three rather good-looking children. The man was said to be an excellent trapper, and the country lying inland from Seven Islands rich in fur-bearing

animals. These Indians proved something of a disappointment to me. They were wearing mostly store clothes which, indeed, I learned had been purchased from a big mail-order house of the Dominion that does extensive business with the people of the coast. I was to meet many less sophisticated Montagnais at Mingan and farther east.

On the night of this same third of June we put across to Ellis Bay in the famed island of Anticosti ("Anti Coast" in the parlance of the North Shore natives or "live-yeres"). But I could see little to satisfy my curiosity. It was midnight and as black as a photo changing bag when we arrived. There were sparse lights on a dim shore line of dark conifers, the rattle and jangle of a dredge at work deepening the bay and the "putt-putt-putt" of a motor boat coming out toward us in response to the *Nayarit's* impatient whistling. Two huge, fierce-looking special guards boarded us from the power boat for the evident purpose of scrutinizing all who might try to go ashore at this island empire of manifold restrictions. One priest and a companion churchman went down the suspended stairway at the steamer's side to the launch and were "putt-putted" away into the blackness amid mail sacks and baggage. A whistle, churning waters, and we were gone.

TWO BRANDS OF LABRADOR HUSKIES

These stalwart children of masters and servants were found at Kegashka Bay. No pampering takes place here

We came to Mingan. Here it was that Lord Strathcona made his start as factor of the Hudson Bay Company post, under the name of Smith, and later I looked upon the old hand-hewn log building, now abandoned, which had housed the post. Here it was, too, that my real cruising began and under the most fortunate of auspices. I transferred from the steamer and, with the appalling amount of equipment essential to the successful taking of wild life photographs and motion pictures, installed myself for the remainder of the summer on board the 40-foot Canadian patrol boat *Perroquet,* named by the French for the puffin, as the guest of my valued friend of many years, Harrison F. Lewis, her master. As Chief Canadian Federal Migratory Bird Officer for the provinces of Ontario and Quebec, he would in the normal pursuit of his duties be going to the localities which I, as a visiting ornithologist and photographer, should most desire to see for my own special purposes.

Here among the Mingan Islands the promise Mr. Lewis had made to show me "a thousand eiders" began indeed to be fulfilled, and my acquaintance with the gay drakes and soft-wrapped eggs commenced. On the morning of June 6 we were up early and off amid a

SHELTERED BY THE SOFTEST OF COVERS

These eider eggs are like jewels in the fluffiest of settings. When covered, no cold can reach them

A YAWN ON THE LABRADOR COAST

This newly-hatched razor-billed auk gives expression to his feelings by gaping prodigiously, if not politely

(Above)

TRYING TO AVOID DETECTION

The wary old eider crouches in her nest, torn between the desire to flee and the fear of leaving her unhatched young

AN OLD MAN OF THE SEA

A grand old seal fisherman, whose features breathe the spirit of the Labrador coast

CHILDREN OF A PASSING RACE

These are Montagnais Indian youngsters, picturesque even in store clothes

A RARE BIRD

This cormorant, who leads a skyscraper existence, is numerous in Europe, but scarce in North America

(Below)

ONCE PERSECUTED

But now protected. This ring murre seemed indignant when he was captured for banding purposes

(Right)

PERFECT PROTECTION

The inside of the nest was as much as 28° warmer than the chill Labrador air

WHERE THE LAND SEEMS AS BARREN AS THE SEA

"Rocky Bay is a perfect Labrador fjord, in which we came to anchor beside a fishing schooner"

semi-fog by row boat or "flat" to Wood Island, and Gun Island, both good duck places. Here the spruce and balsam covered all except a narrow margin back of the shore. Along this strip we walked. The ducks had taken full advantage of the thick cover, placing their nests on the ground beneath low-drooping branches. Trails led through this jungle from the shore to the nest sites. Wary old eiders would sometimes remain motionless on their nests, others would walk stealthily down the trails, standing very still now and then to listen. When our noisy approach convinced them that danger was at hand, the birds would break cover with a rush. Strong pinions were flailed violently against shrubs and grasses as heavy forms burst into flight, while low, nasal quackings were added to the general confusion of sounds. It was like ruffed grouse flushed close by. The faculties were momentarily stunned. Even though I had heard the slight crack of a twig and knew that a pace or two forward on my part would catapult the eider into the air, when the bomb exploded I was invariably "frozen" for the moment to the spot where I stood. My feet failed me.

THEIR FIRST SWIM

Hardly dry after hatching, and not yet acquainted with their father, these eider chicks swim without a teacher

I asked Lewis not to point out nests to me should he see any. I wished to locate the first one for myself. Bird after bird crashed and quacked away, but all apparently came from inaccessible strongholds. Presently I saw a big brown beauty run a short distance from the base of a low-slung balsam and "take to wing", as a Labradorean would say. Thus I found the treasures. There they were—pale green satiny beauties—five eggs of the American eider duck. And what a blanket they were wrapped in! Ashy-tan fluff, gently billowing around the nest rim and partly overflowing the eggs as if they had been jewels in a setting. The old lady had evidently not been left time in which to arrange the eider down over the eggs, else my first nest would have been less showy, for when an old eider goes away on a visit she commonly draws the down blanket snugly over the eggs so that they are completely hidden.

As fascinating as were the eggs, the eider down was of even greater interest, perhaps because I had always heard so much about it. I had read of the domestication and farming of eider ducks in Iceland where, it is said, if a duck makes up her mind to nest in an Icelander's bed the man sleeps on the floor rather than disturb her! The down is reported to be worth five dollars per pound — a fruitful nest yielding a sixth of a pound—and the demand always exceeds the supply. It is the hope of the Canadian Department of the Interior that eider ducks, through the protection which is now being given to them, may increase to the point of producing the down in commercial quantities.

To lay head on a pillow filled with down from the eider's breast is to be sure of over-sleeping most atrociously. The ultimate in softness it is, and warmth! Many an eider down sleeping bag of explorer and prospector has been used with comfort in sub-zero weather. The secret of its magic seems to lie in the fact that the down, with its myriad air spaces, acts as a non-conductor of heat and cold alike.

On the easterly island of the St. Mary Islands I found an eider's nest containing four eggs, the old bird having been away from her post between one and a half and two hours. She had covered her treasures before leaving, except for a small opening in the center. Into this nest I thrust a photographic thermometer, the bulb end beneath the eggs about to hatch. After about five

(Right)
LIKE AMERICAN POLITICS
Here is a "wet" and a "dry" in the same herring gull family

WHAT THE PALE GREEN EGGS CONTAINED
He has just dried off, but isn't inclined to be sociable right now

minutes the reading indicated an inside nest temperature of 90 degrees Fahrenheit. I then placed the thermometer in a sheltered spot where the sun shone upon it and left it there a full five minutes. The reading was 80 degrees F. The temperature behind a boulder out of the sun was 62 degrees F. The time was between 4 o'clock and 4:30 in the afternoon. I was being convinced of the value of an eider down coverlet. No eider egg or newly-hatched chick should be left for long without one.

The hardihood and precocity of the eider ducklings demand admiration. One nest I found held one egg not yet pipped, a second cracked open but the chick still inside, a third that had hatched but the duckling was so new he was still wet and "stringy". Two other chicks had completely dried but they could not have been more than a very few hours out of the shell at the most. These two dry little fellows I removed from the nest and placed in a small pool nearby where I took motion pictures of them. They dived instinctively at once and were able to remain beneath the surface for many seconds. More than this, they dived repeatedly with only brief intervals at the surface for breathing. They swam like veterans, always staying close to each other, and gave me a real job when I undertook to catch them again to restore them to the nest. They had never before been in water, they had never even seen their mother, much less their father, swim—yet their aquatics were perfect.

Both the red-throated loons and the eider ducks feel a sense of security when resorting to the outer islands of this coast for home-making. Foxes prowl these places in the winter when there is an ice bridge connecting with the mainland, but retreat to the mainland before the ice breaks up, leaving the islands as havens for the birds. On these islands are many fresh ponds, the water of which is stained brown, and sometimes almost black, by the subarctic vegetation. They contain no fish since these shallow basins freeze to their very bottoms in the severe Labrador winters.

THE SHAG CLIFFS WHERE WARY CORMORANTS NEST
The accumulated whitewash deposited by generations is plainly visible far out to sea

(Left) LIKE ROOSTING ON THE SIDE OF A BUILDING
One would think that a good wind would blow crude nest and bird into the pounding surf below

On the shores of these ponds the red-throated loons place their nests and in them the young loons remain prisoners with restricted liberties for perhaps two months, or until they are able to fly. To these ponds or pools the mother eider duck often leads her brood soon after all members of it are dry and it is in these places they have their first swims. But within twenty-four hours she may lead them away from this quiet spot—down through stunted firs, spruces and larches that fill the depressions like dark green snow drifts, across smooth carpets of black crowberry and over still smoother stretches of glacier-scoured granite—to the "land wash", the ocean's edge. There is no hesitation. Mother utters low "wank-wanks" of reassurance and the ducklings forge bravely after her. She draws them this way and that at will, as if she were a magnet and they iron filings. They swim close behind mother's tail or at her flank and with a unison of movement that reminds of shore birds in flight.

One day I had been inside my blind for an hour or so at the edge of one of these small island ponds where I was awaiting the return of old red-throated loons to their two young. The children had long since become indifferent to the presence of the hiding place where I was and were swimming about together, one of them turning nearly on his back while preening his belly. Without warning, there was the sound of strong wings in the air, followed by a "swish" as a big bird came into the little pond not more than fifteen feet away from me. It was a female eider. She was unsuspicious and soon swam through a dense border of buckbean near the opposite shore and waded out on land, hidden by shrubs and grasses. In a little while I noticed the tops of the buckbean plants waving, then head and breast of the old eider pushed through into the open. As she swam clear of the plants I got quite a surprise. Close behind her were two very small fluffy balls—ducklings she had evidently "checked" for safe keeping when she saw me coming over the island toward the pond. During all the long interval the little chaps had remained *put*: they never moved until mother called for them in person.

If one spot struck me as being more spectacular than another along this northern coast of many wonders I believe it must have been Wapitagun, a locality which also greatly impressed John James Audubon when he saw it in 1833. Here, on the face of a precipice rising sheer out of angry, swirling green water of great depth, live the only common cormorants, *Phalacrocorax carbo,* at present known to breed on the north shore of the Gulf of St. Lawrence. There were fewer than three dozen nests that could be counted, those situated on the upper ledges being accessible from above. To perch on one of these ledges amid the nests, perhaps unconsciously striking the attitude of a cormorant oneself, watching these giant, white-throated shags jam on the brakes as they came hurtling in from space, and clutching the nest rims with their black, webbed toes, while pig snorts issued from their flabby throats,—this was an ornithological thriller of the rarest sort. I never missed an opportunity to visit these shag cliffs when our wanderings took us to Wapitagun.

To look down from these lofty perches upon the water far below was somewhat like viewing the East River from Brooklyn Bridge or Broadway from a skyscraper. It was no place for those affected by dizzy heights or for absent-minded persons. Once as I squatted on one of these granite shelves, my attention shifting from distant, ghostly icebergs to arriving cormorants and from them to passing bands of kittiwake gulls, I chanced to glance downward almost directly beneath me to the water. The surface was rough—very rough. Wind, tide-rip, swift current and back thrust from the cliff wall combined to make the kind of choppy sea one looks into from the rail of a big steamer, with a prayer of thanks that he is not down there in a cockleshell. Through the very midst of all this turbulence, two mother eider ducks were swimming almost side by side, followed closely by their combined broods of nine or ten ducklings pedaling frantically to keep up and closely massed like a swarm of whirligig beetles.

These two old ducks swimming below me were doubtless on their way to a safe lodging place for the night, probably one of a group of islands lying offshore to the southeast. At about dusk the old birds take their young ashore at such a place to brood them for the night, selecting an easy landing place and leading the way up a slope, the company of ducklings swinging along in the rear with their comical, rolling gait like the good sailors that they are.

The pooling of families for trips is a common practice among eiders. Sometimes even three old ducks will thus join their fortunes. It may be good protection insurance. The father eiders, once so amorous, have long ago taken their leave, flocking with others of their sex and departing eastward for the open ocean, never waiting to set eyes on their progeny. So it may easily be that four eyes, or six, in the world-wise heads of eider mothers are better than two in the battle of vigilance against enemies.

By the time I reached Wolf Bay, where there is a government telegraph, I had seen so many eider ducks that I felt I simply must tell somebody about them. So I wired the American Nature Association as follows:

NIGHT LETTER

"Eiders numerous along Canadian Labrador coast due to excellent protection by this (Canadian) government *stop* Have seen personally more than two thousand breeding birds in ten days' cruising *stop* Hundreds of them in each four sanctuaries visited to date *stop* Three hundred seventy-five seen from one hilltop *stop* As I walked over one island to-day many nesting birds flew up on all sides *stop* Despite lingering snowbanks and passing icebergs some young eiders have already hatched *stop* Realize this fine bird is making wonderful recovery from shadow of extinction *stop* With good weather large increase will take place this year."

So, after generations of the severest persecution and destruction by transient fishermen, by resident natives and by Indians, the American eider—the *Somateria dresseri* of the bird student,—headed straight for extermination but a few years ago, is steadily gaining in numbers. The bird is beginning to re-occupy its old haunts from which it was driven. More power to the good people who are protecting this, one of the grandest ducks of North America. May the love notes of the beautiful eider drakes forever resound, like the cooings of giant ring-doves, in the wild fjords of Labrador.

TERMITE ATTACKED BY A FUNGUS

Native American termite. Apparently the disease does not prove fatal to the insect, for he seems to be thriving

ALL *in the* LIFE *of a* TERMITE

About the Friends and Foes of White Ants

by Thomas E. Snyder

Entomologist, Bureau of Entomology, U. S. Department of Agriculture

(Below) TREE-GOING ANT-EATER

This mammal lives on ants and termites

IN the study of the close association of dissimilar forms of life lies one of the most fascinating pursuits in the whole realm of biology. These associations exist to a varied and interesting degree among that group of insects known as termites, or white ants. The guests are both welcome and unwelcome, but they are mostly not even relatives, just friends or acquaintances with large and often hungry families who drop in for an extended visit. They vary from minute forms of bacterial and plant life to ant-eating mammals. They serve Nature in maintaining a balance of termite growth, or just "keep company" for reasons which make their study fascinating.

Parasites, predators, scavengers, "guests", friends,—the termites struggle with them, tolerate them or care for them. Since there is no altruism, even among the social insects, you may be sure that if insect guests are protected it is because they are useful. Some of these forms exchange provisions with the termites and have glands from which the white ants obtain some special liquid nourishment. There are, also, various forms of single-celled plants and animals living on the termites, in many cases performing roles the real significance of which are unknown. Moulds and bacteria are found acting as effective checks upon the increase of termites, apparently man's best ally against these destroyers.

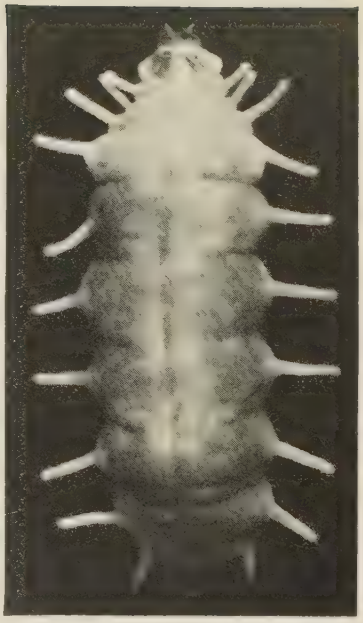
The dominant true ants, armed fore and aft with jaws and sting, are the worst enemies of termites, whose only weapons are on the head,—jaws and a tube from which exudes a sticky defensive fluid, very effective against ants. Armies of ants, in Australia, break into mound nests of termites; the termites retreat into the interior and wall off with nest material the invading ants, but the ants are usually able to completely or partially take over the nest. Ants eat termites and raids on termite nests are often for the purpose of obtaining food. Even the primitive termites, living in wood, wall off any openings with excreted pellets of digested wood.

Termites and ants, however, can and do live together peacefully in separate parts of the same carton nest, but each insect has its own galleries. If such a nest is broken into by man,

In the office of Nature Magazine, at least, Dr. Snyder is known as "the termite man". He has written much about the destruction of these white ants when they invade the homes of man. It appears, however, that they are, in turn, invaded and that they have friends. They live in varied associations with different forms of life, wherein lies the interesting story told here.

WATER BEETLE GUEST OF A TERMITE

This insect keeps company with a Costa Rican termite. The glands supply food as payment for its keep



however, the ants fall upon the termites which are helpless when exposed.

There is an interesting biological relationship between certain tropical American termites which build carton tree nests, and stingless bees, *Trigona*. The bees build their nests and honeycomb within the nests of the termites, often in the center, and take over a large portion of the termite nest structure. Anyone disturbing such a termite nest is assailed by swarms of these bees, which can not sting but do bite and are able to penetrate under clothing or into hair, making one extremely uncomfortable.

(Below) NOT UNLIKE THE TERMITE

A spider-like guest of the termites

Wasps often construct their cells in the outer layers of mound nests of termites. Such termite nests are also made use of by many other forms of life which find these nests convenient havens.

Especially interesting is the large reptile — the Nile monitor which breaks into and lays its eggs in the interior of termite nests and leaves them to hatch. The termites maintain a constant temperature and humidity in their homes and at once repair the break made in the nest by the reptile.

Certain parrot-like birds also excavate their nest holes in the carton tree nests of ants and termites, in Central and South America. Young birds are reared in such nests.

Various characteristic, small shell animals or mollusks are found only associated with termites. Nothing is known as to whether there is any correlation between their lives. Other crustaceans, having no definite shells, called "pill bugs", are specially modified and also live only associated with termites.

In Chili, a small, bluish kind of *Peripatus,* a worm-like primitive animal, thought at one time to be the ancestral form of insects, lives in galleries of a termite in wood. It feeds on the termites.

Specially modified spider-like Solpugids live in termite nests, where they prey on the inhabitants, as do specialized centipeds. Millipeds, modified in form, also live only in association with termites.

At the time of the swarm of the winged termites they are preyed on by many kinds of reptiles, lizards, chameleons, toads, birds, spiders, ants, and others. Indeed it is remarkable that any, out of the enormous numbers of the flying termites, survive to establish new colonies. Rare termites are occasionally to be found in the stomachs of toads, which catch the night-flying as well as day-flying kinds.

In Africa, the odd-shaped primitive giant, pangolin, whose body is protected by scales, feeds on termites. Peculiarly-shaped mammals called "ant-eaters" in tropical America break into termite nests and devour the inhabitants. They have long claws and a long sticky

(Left) AN ANT BEAR, NO LESS
This odd-looking mammal with the efficient nose comes from South Africa and gets its chief nourishment from termites, hunting them at night

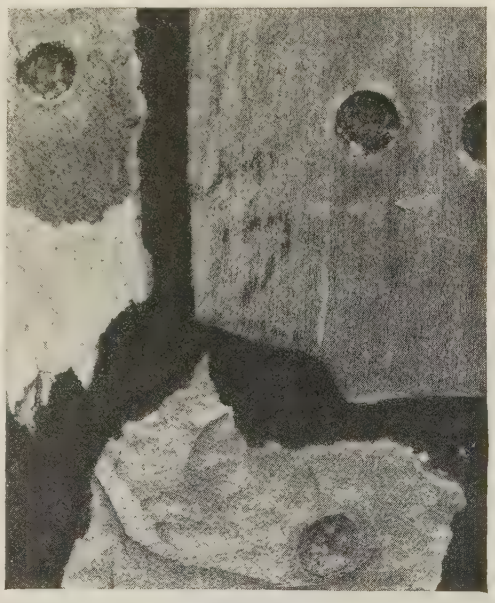
A BUSINESSLIKE HEAD
It is that of a termite soldier, living in dry wood and using its head to stop invasion from without

tongue with which they take up the termites, but they have no teeth. Examination of the stomachs of these animals, after a jungle meal, often reveals rare termites, ants and their guests. The largest of these American anteaters, *Myrmecophaga,* has a bushy tail and when the animal walks, the long claws are folded under the foot. This animal is very wild in the forest and will resist capture by attacking with the claws. When removed from its forest haunts, it soon becomes tame and can be picked up and carried under one's arm. Such an animal may be seen alive in the National Zoological Park, Washington, D. C. A smaller kind, *Tamandua,* is less dangerous to capture and makes an interesting and docile pet. Another South American arboreal anteater, *Cyclopes,* feeds principally on true ants.

Other odd mammals which feed on termites are found in various parts of the tropical world, especially in Australia. A peculiar case is the "Aard-wolves" of South Africa which search at night for termites, getting from them their principal nourishment.

Even the African primates, those ape-like mammals distantly related to man, feed on termites, as well as other insects. Aboriginal man himself feeds on termites, either raw or cooked, and has many devices by which to trap large numbers of the winged forms, at the time of the swarm. The huge queens—often several inches long—are especially relished.

The primitive springtails and silverfish are among the most lowly insect associates of termites. These "termitophiles", which means "termite-loving", are probably merely scavengers.



BARRICADED TERMITE HOLES
Note the plugs placed in the wood to keep out invaders of the homes

Among the true bugs or sucking insects found with termites are beaked predators, as well as peculiar flat, oval or nearly spherical Termitaphis. These latter insects occur in galleries with termites and move about fairly rapidly.

Most interesting of all, however, are the protected and cared-for guests, which are often remarkably modified. The abdomen is monstrously enlarged, possibly due to the same special food which is given to the enlarged queen termites. Another specialized character is the presence of peculiar glands or appendages for the secretion of exudate or the special liquid nourishment so eagerly sought after by termites. It is the rent payment.

Fly and beetle adults have greatly enlarged abdomens, and in some beetles the swollen abdomen is in-

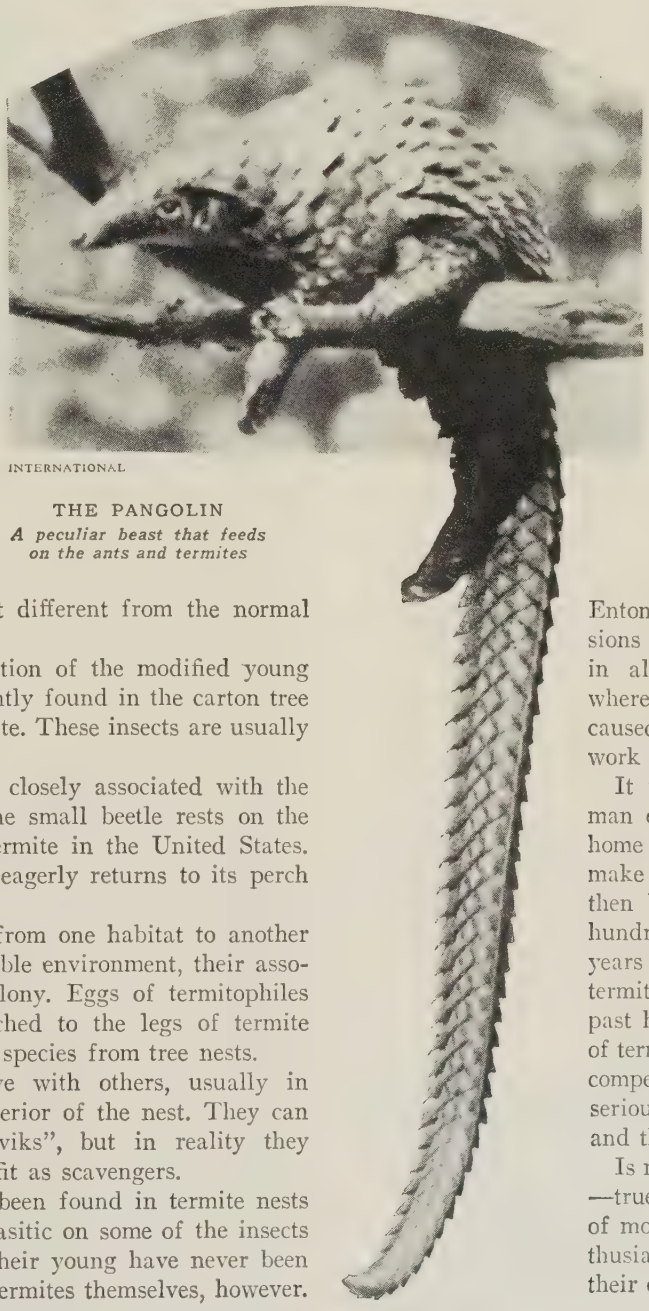
ANOTHER ANTEATER
Well equipped by Nature for the fare it seeks

(Below) A TERMITE GUEST
This insect exchanges nourishment with host

verted over that portion of the body on which are the legs. Fly larvae, the caterpillars of moths and beetle larvae have these peculiar appended exudate glands.

This intimate association for mutual benefit of different forms of insects with the exchange of nourishment between termites and their guests is one of the most specialized and remarkable cases of "symbiosis", or living together, in all animal life. Several distinguished entomologists have made life studies of these intriguing insects, of which termites are the hosts.

Some beetles with oddly modified larvae or young are normal in the adult winged state. A lady-bird-beetle found in tree termite nests in Panama has the larva modified and is a cared-for guest. The larvae exhibit the same convulsive jerky movements shown by termites when alarmed. The adult is not different from the normal type of beetle.



INTERNATIONAL

THE PANGOLIN

A peculiar beast that feeds on the ants and termites

A most unusual association of the modified young of a water beetle was recently found in the carton tree nest of a Costa Rican termite. These insects are usually aquatic in habit.

Some of the insects are closely associated with the queens of the termites; one small beetle rests on the body of the queen of a termite in the United States. When removed, it always eagerly returns to its perch on the queen.

When termites migrate from one habitat to another in search of a more favorable environment, their associates migrate with the colony. Eggs of termitophiles are sometimes found attached to the legs of termite queens in South American species from tree nests.

Even some termites live with others, usually in special galleries in the exterior of the nest. They can be termed insect "bolsheviks", but in reality they probably are of some benefit as scavengers.

Wasp-like insects have been found in termite nests and are very probably parasitic on some of the insects living with the termites; their young have never been found as parasites in the termites themselves, however.

Civilized man, of course, disturbing the balance of Nature by felling the forests and cultivating the fields, is the most serious enemy of termites! He destroys the original homes of termites, forcing them to invade his own structures. When termites are carried accidentally by man by means of commerce from one country to another, as a rule their parasites and guests are not transported with them.

Losses to householders caused by termites have led to study by city, state and federal officials to determine how to build so as to keep out termites. After proper methods of construction, based on a knowledge of the habits of termites, were worked out they have been included in mandatory city building codes in certain cities as a protection to the house builder. Efforts are being made with some success by the Federal Bureau of Entomology to have these provisions included in building codes in all sections of the country where there is serious damage caused by termites to the woodwork of buildings.

It is a great hardship for a man on a small salary to buy a home on the installment plan, make a large initial payment and then be forced to spend several hundred dollars within a few years on repairs, necessitated by termite damage. While ants in the past have been the chief enemies of termites, man recently has been compelled in self defence to wage serious warfare against termites and their depredations.

Is not the study of the termites, —true "social insects",—worthy of more attention, and is the enthusiasm of the small band of their devotees to be wondered at?

Nature is sage, she is loving, she is free, because there is a spirit breathing in her. God reveals Himself in all her forms; and speaks in all her utterances. Therefore is the face of Nature beautiful; her voices, music; and her various movements decked with grace. It is characteristically when Nature appears but matter, inert as inertia itself, that she is stiff, ungraceful in her motion. When the creating or revealing spirit shapes her features, or sends out an animating glow into her countenance, or freely bends her inert limbs, then is she beautiful. —*The Science of Esthetics, by Henry M. Day.*

ANOTHER GREAT BEAR WANDERED RESTLESS THROUGH THE LONG NIGHT, THE HALF-GROWN CUB FOLLOWED HER

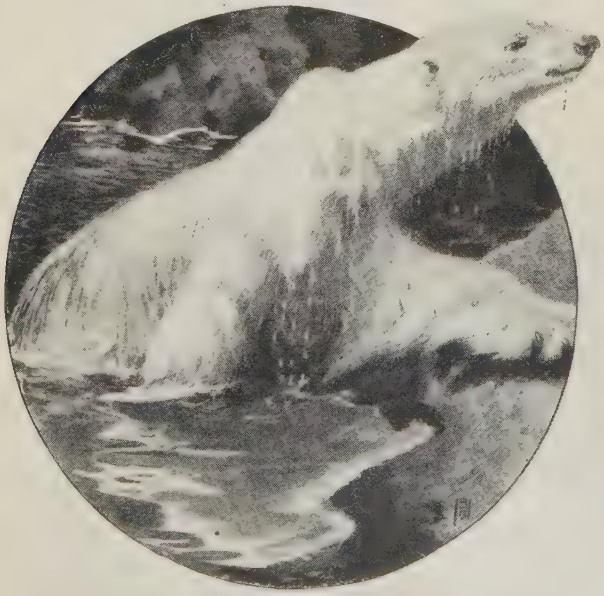
Nanook

by Samuel Scoville, Jr.

Illustrated by R. Bruce Horsfall

At the zenith of a black-violet sky the Great Bear prowled around the Pole Star, guarded by a frost-white moon. On the earth below another great bear wandered restless through the long night in a waste-land of rocks and ice and snow, in the unending search for food which was the price that Nanook, the she-bear of the Arctic paid for life. The half-grown cub who followed her, whimpered hungrily in his throat, for it was long since he had tasted food.

At his cry, his grim mother checked her stride; but even as she stopped, her nostrils caught the faint, unmistakable scent of warm flesh and blood. Swinging her long, pointed head to one side, she moved silently, on paws padded with thick white hair, toward a hummock of newly-fallen snow. Just as she reached it, the little hillock exploded like a bomb and out whirred a pair of ptarmigan, birds like the ruffed grouse of lower latitudes but white as the snow in which they had hidden. Before they had freed themselves from the snow the great ice-bear struck them down. A moment later a cloud of feathers was all that was left of them, and the bears wandered on through a country desolate as the surface of the burnt-out moon.



AT LAST SHE REACHED A POINT IN THE BAY OPPOSITE

Hours later, as the two reached a plateau high above the confusion of ice and rock, there came to the straining nostrils of the leader a sweet, warm reek as of cattle, and scattered black figures showed dimly against the snow. At the sight and scent, the huge bear shot forward like a sprinter from his mark. As she charged, a score of sturdy, wide-horned little bulls swung to meet her, with the swift discipline of a musk-ox herd. They had short legs, hair so long that it trailed on the snow, and all the swift alertness of mountain sheep. Behind the bulls was an inner circle of cows, within which were a dozen frightened calves. So swiftly had the trained herd acted, that by the time the bear reached them, she was confronted by a circle of sharp curved horns.

Hungry as she was, with a whimpering cub at her flank, the gaunt bear stopped—as well she might, for not even the grim white wolf, the craftiest of Arctic hunters, can penetrate the defense of a musk-ox herd.

"A SCORE OF STURDY, WIDE-HORNED LITTLE BULLS SWUNG TO MEET HER, WITH THE SWIFT DISCIPLINE OF A MUSK-OX HERD"

Around and around the bristling hedge of horns she paced, but there was never a break in the threatening circle. With little grunts of defiance, the veteran fighters of the herd, who had faced danger many times before, heartened the younger cows and the trembling calves behind them, and everywhere their front remained unbroken. Once or twice the bear rushed forward, as if intending to charge in spite of all consequences, on the chance that some over-enthusiastic bull would leave the safety of the circle and meet her half-way. Again, turning her back, she retreated slowly as if in sudden terror, hoping to be pursued, but the herd paid no attention to any such simple stratagems. Only a line of lowered glaring eyes and a ring of fatal horns confronted her whether she advanced or retreated, until at last, with many a backward glance, she lurched away, followed by her cub, in search of easier prey.

Disappointed by the musk-ox, the bear peered into every nook and cranny as she moved across the frozen wilderness hunting for food. Her course led her at last through a maze of basalt boulders, ice-blocks and pans, toward a stretch of open sea. As she approached that lonely water under the orange glare of the Northern Lights, her keen ears caught the tiny tinkle of breaking ice where the black water close to the shore had begun to skim over in the cold. At the sound, the bear crouched low, with the cub imitating her every movement. In the dim light a long, dark shape floundered awkwardly up on the shore. There, poised where he could see all about him and shoot down into the water at the first sign of danger, lay a huge harp seal—the "saddleback" of the sealers. This one was an old bull who weighed all of eight hundred pounds. He had a dingy white body blotched with black, and was far larger than the spotted leopard seal, the ringed seal or even the gray-bearded seal.

Without a sound, the white bear disappeared in the dark like a ghost, while her cub crouched behind a hillock of ice. Making a long detour, the fierce huntress reached the shore at a point hidden by heaped masses of ice from the sight of the seal and, slipping soundlessly into the water, swam far out, only her black muzzle showing above the surface. When at last she reached a point in the bay opposite to where the saddleback was, she swam toward the shore, silent as a shadow.

With his back to the water, the great seal lay, continually testing the air with his sensitive nostrils and ready at the first sight, sound, or scent of danger to rush into the water. Wary as he was, he suspected no danger from the open sea which he had just left. Suddenly his keen ears caught the sound of dripping water and a little grating noise at the edge of the shore, which might have been made by floating ice. The motto of the wise seal, however, is: "Make sure!" As for the unwise, they are dead, victims of their own imprudence.

"A HUGE HARP SEAL, THE 'SADDLEBACK' OF THE SEALERS"

Wherefore this one, at the first slight noise behind him, swung around, only to see a vast shape creeping towards him. At the sight, the seal hurled his mottled bulk towards the open water. Swift as he was, the white death below was swifter. Even as the saddleback reached the water, the fierce muzzle of the bear shot forward like a striking snake and gripped the seal's round head. Despite the bear's weight, the rush of the saddleback carried her down into the black water. Few land-animals indeed would dare the depths with such a swimmer. Maddened by hunger, however, the bear paid no attention to the odds of the water that were against her, but sank her fierce teeth deeper and deeper through the seal's thick pelt. A moment later, pushing the lifeless body of her prey before her, she swam slowly up through ten feet of black water laced and lit by the phosphorescence of Arctic seas. Then she landed and without an effort swung the body of the seal out upon the rock, and hissed sharply through the still air. At the sound her hungry cub hurried from his hiding-place so fast that he rolled over and over down the slope like a ball, nor ever stopped until he joined her in a feast of rich, pure life-giving seal-meat.

When at last they were both full-fed, the old bear dragged the carcass along the shore and hid it in a cave near the top of an ice-cliff which jutted out over the water. There, curled up together, the two slept, plunged in that snug content which food and warmth bring.

LUX *of* LASALLE

He Proves His Worth in the Senate

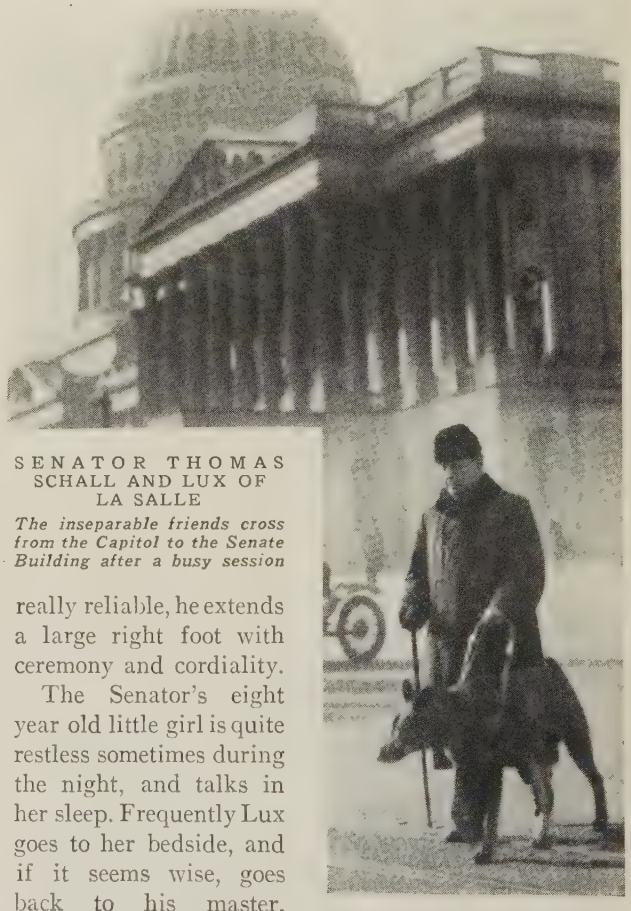
By Ethel I. Mason

ON the crowded streets of Washington, not long ago, a large black German shepherd dog appeared, acting as escort to his blind master, Senator Thomas Schall, of Minnesota. He was "Lux of La Salle", graduate of the Ludendorf College for Dogs in Munich, and wearing the brass token which serves as a diploma for his study. He is the first dog to enter Congressional Halls in official capacity.

Lux is large and powerful. A few growling hints, and none approach his master. His special harness with the large handle enables Senator Schall to accept his guidance, and his quick intelligence and faithfulness make him a pilot accurate and trustworthy.

Lux's task on mornings the Senate is in session is to assist his owner from his room in the Senate Office Building to the underground trolley line that runs to the Capitol. Once safely in the car, Lux proudly sits beside his master, carefully tucking his tail beside him to prevent it from catching in the machinery. Once in the Capitol, he leads his master to one of the cloak rooms outside the Senate chamber, where he awaits his return. Right into committee meetings goes the faithful dog, and lies under his master's feet during the discussion. He seems to realize on such occasions that he is "visiting", and must not resent the presence of a number of persons to whom he has not been introduced.

When at home, in the "cave" beneath the desk in his master's office, however, people are treated differently, and immediately introductions must be made. If Lux frigidly offers a left paw, it indicates that the acquaintance may be a brief one as far as he is concerned, but when he is assured that the newcomer is really reliable, he extends a large right foot with ceremony and cordiality.

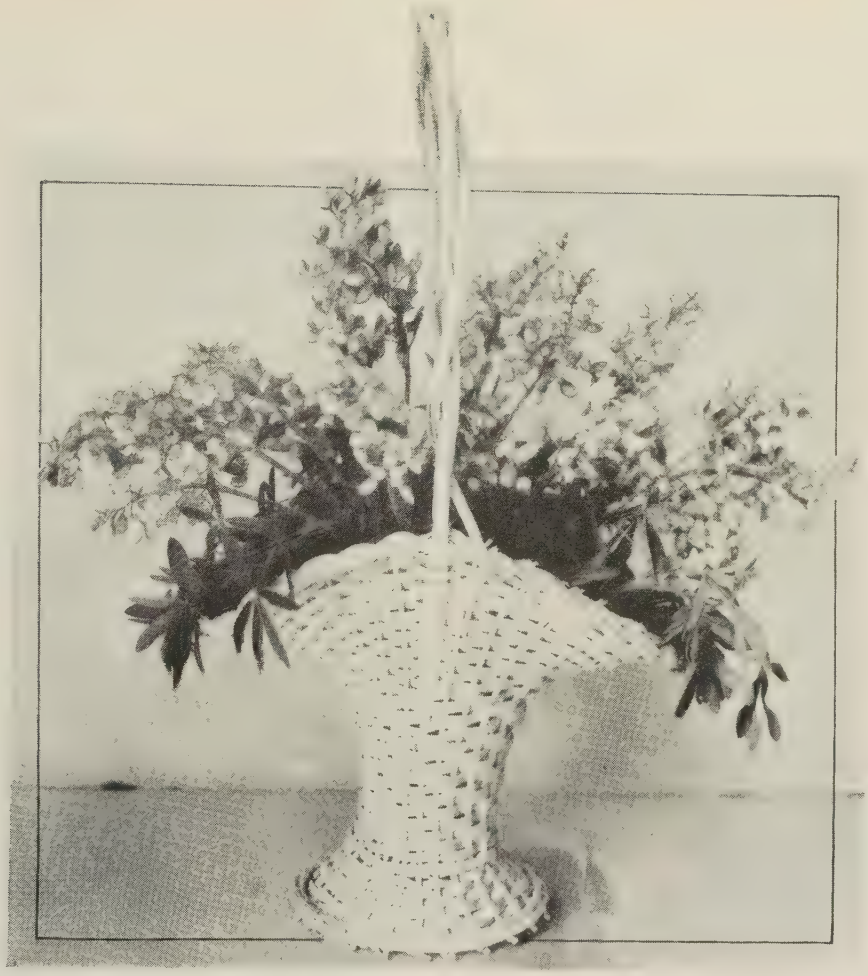


SENATOR THOMAS SCHALL AND LUX OF LA SALLE

The inseparable friends cross from the Capitol to the Senate Building after a busy session

The Senator's eight year old little girl is quite restless sometimes during the night, and talks in her sleep. Frequently Lux goes to her bedside, and if it seems wise, goes back to his master, and pulls his trouser leg to get him awake and attentive.

All breeds of dogs are not gifted enough to be trained as guides. Airedales and German shepherds are in majority among the ranks of bright young puppies that are able to pass their "prep" school tests with flying colors. They are all trained to disregard other dogs while on duty, unless to protect their master. Senator Schall tells only of one case of disobedience. A small water spaniel imagined Lux's forbearance was due to fear. He suddenly realized that he was hanging as high in the air as Lux could reach, and cries of "Aus" from the Senator were needed to release the dog who was swinging in the air like a watch-charm. Lux is friendly and kind,—but "keep your distance from my master".



EMBLEM OF THE LONE STAR STATE

THE DAINTY BLUEBONNET ON PARADE

BLUEBONNETS—THEY'RE TEXAS!

All Love the Flowers That Carpet the Fields

by Mary Dagget Lake

A CANOPY of blue sky, a velvety carpet of bluebonnets, myriads of bluebirds, and bracing "blue northers" thrown in for good measure—that's Texas! Blue, the universal symbol of happiness, is the predominating color of the state. In keeping with this idea the bluebonnet was selected as the state flower of Texas more than a quarter of a century ago.

Not only has the bluebonnet been a favorite of the native Texan, but the Indian, the Spaniard and the Mexican have admired it from the earliest. It has no parallel in the world of massed blue flowers. The nearest approach is the blue cornflower of Europe. Upon close examination the flower petals will be found to have a blood red splotch on each tiny heart. Because of this the plant has been termed *Lupinus subcarnosus.* The myth that the bluebonnet sprang up where drops of human blood fell is associated with the old Greek legends of the hyacinth and the narcissus.

The blossom of the bluebonnet is composed of many small flowers clinging snugly to the parent stem, each shaped like a tiny bonnet,—hence the name. Botanists classify it as belonging to the order Leguminosae. It is a lupine, although many have mistaken it for a *Trifolium* or clover. The early settlers called it buffalo clover. However, the true buffalo clover, botanically known as *Trifolium reflexum,* is a distinctly different plant.

The bluebonnet is an annual and develops its seed in pods formed from the flowers. The seeds live for years, all not germinating in the season following their growth. They are very exacting and develop only under favorable circumstances. It is generally thought that the plant dies after making its seed, although some authorities claim that certain varieties are perennial and renew themselves from the root. This impression probably came from the fact that seedlings are continually coming up where they fall, in the immediate vicinity of the parent plant. No special means of dispersal is provided for the seeds. The ordinary movement of wind and dust carries them from place to place.

The plant is somewhat similar in structure to the

purple or woolly loco weed, *Astragalus molissimus.* Many leguminous plants found in the West closely resemble each other, and there is an unfortunate tendency to class as harmful many plants which furnish good forage. At the present time the United States Department of Agriculture has only three plants definitely known to be locoes. Animals eat the bluebonnet to their advantage. In some communities it is cut and baled into hay for the winter supply of stock food. It flourishes on barren soil quite as well as on richer ground. In fact it seems rather to prefer an alkaline soil. The early settlers thought it contributed to infertility, and because of this they very unjustly called it "wolf flower". It is now known to be a soil builder. Waste places on which bluebonnets have grown for successive years will later raise other crops profitably.

Very dramatic and Texas-like was the fight that made the bluebonnet state flower in 1901. The Colonial Dames led the forces in favor of it, but in the House of Representatives supporters of the cactus and the cotton boll, "the white rose of commerce", fought the proposed state flower bill. Finally a picture of the bluebonnet was brought in the chamber, and amid great applause, the whole house swung to its color. The flower is now a candidate for national honors in the American Nature Association National Flower Poll.

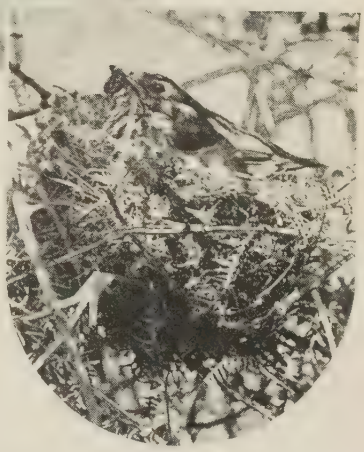
There are over seventy species of the bluebonnet in America, mostly in the West. They grow as far north as the Arctic Ocean and west to the Pacific coast. However, outside of Texas the coloring is sometimes less brilliant. In certain localities the flower is pale and insignificant looking. In Mexico it is called *el conejo* (cottontail rabbit). *Lupinus texensis,* the Texas variety, is said to be a great home lover, and some authorities even venture to claim that it never crosses the border. Even so, it still would have a marvelous range, considering the size of the state.

Many are the legends that have collected around the bluebonnet. The Mexicans say that the flower first came from Jerusalem hillsides to the ancient missions, but the old Aztec tale, rescued from obscurity by J. Frank Dobie, and placed in the book of Texas folk-lore, *Legends of Texas,* gives a different origin. At one time pestilence mowed down the people as the revenge of a jealous god for misdoings. The god demanded a sinless human offering as atonement, and the fairest and purest maiden of the tribe went forth to die for her race. As she approached the altar, her bonnet of blue slipped unnoticed from her head, and fell to the ground. The next morning there lay around the altar a soft carpet of blue flowers, each splotched with the hue of her spilt blood.

The ravages of time have failed to diminish the charm of this subtle sweet flower which comes with increasing loveliness each new spring, though the ravages of those who pull up by the roots of a Sunday have somewhat diminished the size of Texas' blue carpet.

FIELD AFTER FIELD

A canopy of blue sky, a velvety carpet of bluebonnets, myriads of bluebirds —that's Texas!



IN THE PARIS FLOWER MARKET

At the left is the dabchick, near relative of our own pied-billed grebe, and at the right the song thrush of the Bois de Boulogne

So This Is PARIS!

Introducing Some Feathered Inhabitants of Both Banks

by L. Raymond Talbot

Illustrations by Coldstream Tuckett and the Author

THE train from Cherbourg slid into the Gare St. Lazare. At last we were in Paris, to which everyone looks forward, and where happy tourists go when they die. Blue-smocked porters seized our baggage and eagerly we followed in their wake. After a brief but exciting moment we had commandeered a taxi and settled down for the ride to our hotel. What would be the first impression of Paris? Each one had his own idea.

A traffic jam! A sea of cars, going in forty directions —or rather trying to go, for most seemed to have "ceased to function", as the French say. The lines crossed and crisscrossed in a hopeless maze. Drivers gesticulated and shouted. We wondered if there had been an accident. Where was the traffic officer? If there was one we could not see him. Yet our chauffeur surely, if not serenely, drove on. In an incredibly short time he had threaded his way through that apparently inextricable tangle and once again we were speeding toward our destination.

So this was Paris! There was something ludicrous in this traffic situation. No American, not even a taxi driver, we thought, could ever have gotten through. Yet here we were; no collisions, not a car had had so much as its paint scratched. Drivers and some passengers had seemed excited, but the cars went through and to the chauffeurs it was obviously all in the day's work.

But what was that noise overhead? Was there another traffic jam up in the air? Now that we could take our eyes off the cars which we had imagined were threatened destruction as they bore down upon us, we looked up and saw hundreds, perhaps thousands, of screaming birds wheeling, rushing in forty different directions like the automobiles in the square we had just crossed. Up there too, there was no traffic officer, no apparent control, yet there were no collisions. In spite of the seeming chaos these birds were evidently able to take care of themselves.

"What are they"? we asked. "They look like our common chimney swifts", said someone.

And sure enough. So far as the casual observer can tell, they are the same birds. Although not exactly alike, as we learned later when

THIS is one of the series of articles by Mr. Talbot in which he carries us to foreign shores to do our sightseeing and bird-seeing at the same time. He introduces inhabitants of the fair city of Paris whom few tourists see or try to see, but who make it all the more fascinating.

AT FONTAINEBLEAU
In this lovely forest the lover of birds will find much to delight

we looked them up in the book, these European swifts are first cousins of ours and no one will fail to recognize them.

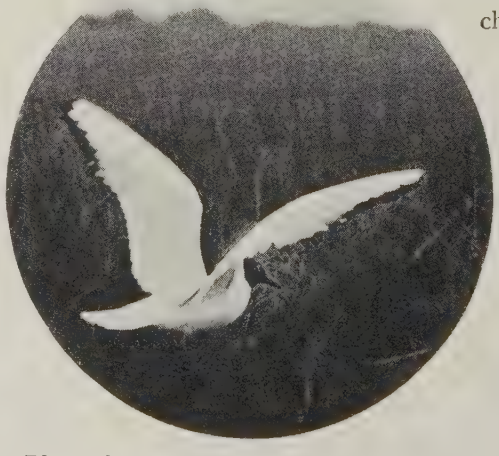
"Who said Paris had no birds?" asked the member of the party who never gives the doubting Thomases any peace. Of course he did not add "I told you so", but we all knew the thought was in his mind, and he was forthwith properly squelched. But he was right. All the way along we kept seeing and hearing more swarms of swifts.

The next morning we set out for our first sight-seeing trip. We began at Notre Dame. That marvelous Gothic cathedral held the greatest attraction for those who had been in Paris before as well as those to whom this was the first visit. Around the church were familiar pigeons. Among them we saw a larger, handsome bird, with a crescent-shaped white spot on either side of the neck, forming a sort of ring, which gives him his name, "ring dove". He is also known as the wood pigeon. He is wild enough in the forests, where he is hunted as a game bird, but seems to like the Paris parks and gardens and here shows little fear of man.

We took a rapid first look at the other landmarks on the Island, then crossed to the right bank of the Seine. The second-hand book dealers' boxes attracted our attention and we decided to come back some day and browse around. But now we wanted to get a general idea of the city. We did not even go into the Louvre, but kept on into the Tuileries Gardens, then to the Place de la Concorde and the Champs-Elysées.

"Quick, quick." The sound came from the thicket. "An American robin," said someone. "I didn't know there were any over here." "There aren't," said another, who already knew some of the European birds and was prepared for this mistake. "Look. There's your bird." A blackbird! But a true thrush for all that, we decided, when we saw him hop along over the smooth lawns looking for worms. "He lifts and lowers his tail like the hermit thrush," was the next discovery. A little later, when we heard a most beautiful song, very similar to the olive-backed thrush's, we found that this too came from the throat of a blackbird.

THE BELOVED REDBREAST
(Below) The black-headed gull alights in a nearby field—a beautiful bird indeed



Before we left Paris we had found that this was only one of several songs of the blackbird, which easily places him among the first half dozen of the best songsters.

We were charmed with the Tuileries Gardens, with the views back toward the Louvre and in the opposite direction, out beyond the Place de la Concorde, up the Champs-Elysées to the Arc de Triomphe in the distance, and quite as much with the children sailing their boats in the little ponds and other delightful intimate touches of French life.

Again we saw our friends the swifts. Other birds were with them, evidently swallows. Now and then they skimmed the surface of the water, and we could see that some, with forked tails, were almost exactly like our barn swallows. These are called swallows, the only members of the family that have that name. Others look more like tree swallows, only they have a pure white patch at the base of the tail; these are house martins.

We found the chaffinches very abundant, even more so than the "English," or house sparrows. We soon

learned to recognize their call note, "pink," though at first it sounded a little like the sparrow's "cheap".

By this time we were all convinced that there are birds in Paris. We felt that we could not spare much time from churches, museums and other more conventional "sights" to take bird walks as we do at home, but we were finding that the birds almost forced themselves on our attention.

So when, after two days of rather strenuous sightseeing, a trip to the Bois de Boulogne was suggested, everyone welcomed the idea; it seemed a good way to relax, and we looked forward to a walk in this magnificent wooded park. Few large cities have a finer bit of unspoiled Nature so close at hand, so easily accessible.

"Birds at the Bois?" said a man at the hotel, who thinks he knows Paris as well as his home town. "You mean the ducks on the lakes? You may see black-headed gulls, also. They will not approach to be fed, as they do in winter on the Thames Embankment, in London, but they are near enough to be examined closely."

We did see tame ducks and swans on the two tiny artificial "lakes," which are all that is seen of the Bois by most tourists. But these ponds and the trim lawns around them are only a relatively small section of the park. Even here we saw many small birds among the trees which line the well kept paths.

Beyond, the Bois de Boulogne stretches away for half a mile or more in three directions, and has scarcely been touched by man. There are a few paths, even automobile roads, here and there, but they are little used and invite the Nature lover to explore this lovely forest; for a forest it really is.

And birds! "The woods are full of them;" and that is no slang expression here.

We found many redbreasts. The European robin is perhaps the best loved of all the birds immortalized by the English poets. For the redbreast readily makes friends with man and sings throughout the entire year. He is closely related to the nightingale; often the quality of his song suggests that marvelous singer. The redbreast is of about the same size as our bluebird, and in build resembles him more than he does the American robin. The breast is orange-red, with a margin of bluish gray between it and the olive-brown upper parts.

We kept hearing scolding notes, which we felt sure were made by wrens. We found the birds without much difficulty; every thicket sheltered a pair of them. They were wrens all right. We recognized them at first sight; their way of carrying their tails tipped up over their backs would alone identify them, even without the brown barred wren-like plumage. They frequently burst into a delightful sweet song, like the winter wren's, which thrills us in our northern woods.

Another song sounded familiar: a brown thrasher, everyone said. But it was a song thrush; this we found to be the common thrush of Europe. Once or twice we heard a mistle thrush, a larger bird, which sings like the bluebird, only much louder and wilder. We found the "chickadee tribe" there in force. There was no mistaking them, especially the blue titmouse and the great.

The blue tit is an exquisite creature, with sky-blue head, greenish-yellow back and sulphur-yellow underparts. Habits and notes tell you that he is related to our chickadee. The great tit is darker above, with black head and white cheeks; a black line extends through the middle of the yellow underparts from chin to tail. His lively call note, "peeker, peeker," came to be a familiar sound before we left the Bois. We saw two other tits, long-

GULL AT ITS NEST

(Below) A restaurant in the Champs-Elysées, with grounds that harbor many birds

tailed and marsh. The latter looks more like our black-capped chickadee than any other titmouse in France.

Nuthatches, easily recognized by their family resemblance, were plentiful, and tree creepers, almost exactly like our brown creepers. Among the evergreens we saw a few goldcrests, which resemble our golden-crowned kinglets. Winter is really the season for them.

We saw two woodpeckers; they might have been hairy and downy, only these European birds are called greater spotted and lesser spotted.

After exploring the woods for an hour or so we went over to Bagatelle, on one side of the Bois. The rose garden there is one of the sights of Paris. On its beautiful lawns we saw a handsome yellowish green bird, with red on the head, feeding on ants just as the flicker does. In fact he looked and acted much like a flicker. He proved to be a green woodpecker; it was not hard to identify him. His call sounds like the flicker's, too.

R. P. GAIT

IT WAS A KINGFISHER

The European kingfisher is one of the most dazzlingly beautiful creatures in the world

European warblers are a hard group to identify. American warblers usually have some striking color by which one picks them out; the European warblers are almost all of sober colors, and so nearly alike that much patience is necessary to tell them apart. But we traced two beautiful songs to birds which were evidently warblers and finally recognized them as the blackcap and the garden warbler. Their songs are similar, but the practiced ear can tell which bird one is listening to.

The blackcap is the more common bird. We listened to several of them for half an hour, there at Bagatelle. Sometimes the song seemed like the purple finch's; another time we thought it was more like the warbling vireo's. These two American birds often sound alike, so in these cases it was only a matter of interpreting one and the same song of the blackcap. But often the blackcap sings a song so different in quality and notes that many, even experienced bird students, have been deceived and thought they were listening to a nightingale.

Several times we heard a peculiar lisping song. Finally we located the singer; it was a sparrow-like bird, —a serin, or wild canary. To those of us who had heard that song around the Mediterranean, where the birds are exceedingly numerous, it was unmistakable, although the books say serins are almost never seen in the north of France. Which simply shows that there is always something new in bird-lore, and anyone who goes about with eyes and ears open may make some worth-while discoveries.

As we walked beside a brook which winds its way through the wild part of the Bois we were thrilled by a flash of most brilliant colors. It fairly took our breath away. The bird was gone before we realised what it was. But fortunately, we saw it again a moment later, perched on an overhanging branch. It was a kingfisher.

The European kingfisher is one of the most dazzlingly beautiful creatures in the whole world, iridescent blue green above, warm chestnut below. He is rare nowadays; he has been persecuted almost to the point of extinction by foolish people who like to see beautiful birds in glass cases on the parlor table rather than alive in the woods or on the streams where they belong.

We returned to Paris by boat up the Seine. This gave us a good chance to see the Eiffel Tower and to get a general idea of the lay-out of the city. On the way to the boat we passed the Cascade. Just behind it, on a tiny pond, we identified two more birds. One looked like the gallinules; we have never seen any, for we live in the north, where gallinules exist only in the bird books; but we have often looked at their pictures. So there was a satisfaction in finding that this bird is known in French as the *gallinule ordinaire*. His English name is moorhen. He is a queer looking bird, all black except for some white feathers under the tail and wings, and a bill of bright red and yellow. He has a funny bobbing walk. When we saw the other bird dive, we easily recognized him as a near relative of our pied-billed grebe,—a dabchick, or little grebe.

That evening we checked up and found that we had already become acquainted with twenty-seven species of birds in Paris, in three days! Not a bad beginning. We had proved that one can see all the regulation things, yet make a few bird friends on the way.

DREDGED FROM THE DEEP

At top are sea hunters and a prize kelp. Below is Doto coronata, *one of the nudibranchs*

Wonders *of the Sea*

Hunting Nudibranchiata in Puget Sound

by Julia Adams Underhill

Photographs by the Author and C. Chamberlain

ONE OF THE TINY BEAUTIES

A member of the Holohepatica tribe. One rows weary miles to find such a creature as this

THE birds were calling softly to each other through the fog and grayness of the dawn as I clambered, heavily laden, down the rocks to the gravelly beach, but to me the call of the gently-stirring waters came more insistent than any other. Behind me, as I crunched over the sand, the ruddy-white tops of the Cascade Mountains broke through the dying night with a splash of color, but I had eyes only for the mist-fringed surface of Puget Sound, in which lay creatures as beautiful as the sunrise and far more rare than a day in June. It was for these I had come.

Only the murmurs of my oars marred the thunderous silence of the breaking day as I glided from the shore, a dark gray blotch in a gray world, on my great adventure. A little way out I glided over three sea cucumbers, lying peacefully on the bay bottom, and a short distance from them twenty great ray starfish, large enough to cover the bottom of an ordinary washtub, loomed up through the crystal-clear water. An instinct within me called "stop", but I did not; today the greatest of sea creatures could not turn me from my purpose. I was after members of that elusive animal group, Nudibranchiata,—and I steeled myself against the call of other interests. I choked down the impulse to revel in the miscellaneous splendors of life on the ocean bottom.

Jelly fish with long tentacles floating out behind drifted by me as I made my way to a sheltered spot over an eel grass bed around the point on a nearby island, and small, iridescent masses of "sea walnuts" and comb jellies appeared. A salmon out for his breakfast sent a circle of wavelets rippling outward against my boat, and these obliterated from my gaze the silver splashes that were a school of herring swimming close by. At last I anchored, and waited for the water to grow clear again, while the ebbing tide gently rocked me lower and lower and the spears of eel grass climbed

THE GOOD SHIP *MEDEA*

Whereon an eager group of collectors went to reach into the rich treasure chest of the sea

out in the open air cleared by the falling waters.

You do not stalk your prey when hunting nudibranchs. You wait, growing impatiently angry at each flounder that flips along the bottom and stirs up mud, and utterly unreasonable toward every strident-whistled tugboat that churns your happy hunting grounds into a reckless confusion. You watch small bluish, iridescent snails creep slowly along the strands of eel grass lying on the water and the white egg masses of this *Margarita* lying like coiled springs near by. Myriad strands of diatoms float out over the surface like silk fringes on the ribbons of our daughters; they bewitch you, till suddenly you perhaps see a slight movement on the eel grass some feet below the surface,—and then you act, with a wide sweep of the net and a gasp as you recognize the quarry you have bagged.

My first catch a beautiful animal, *Aeolidia papillosa*—the first of my nudibranchs. Nearly transparent it was, with a grayish brown back that grew darker toward the head in contrast to a burst of white spots that appeared there. The cerata, petal-like papillae, were very numerous and set in rows. They were lighter in color than the body, but carried out the color scheme of translucent grayish brown. What a start for my adventure into strange depths!

BETTER THAN MUCH FINE GOLD

Two specimens of Acanthodoris brunnea *look down on members of the* Dirona albolineata *sea fraternity in this picture*

I grew excited, and swept the water at random, hoping that something might get entangled in the net, but from it dripped forth only a few small crabs and a small eel-like fish, a blenny. Evidently such unscientific, reckless methods did not deserve reward—but what was that soft mass which floated out into a flower form of opalescent colors? The boat rocked precariously as I reached for it, and only the providence which especially protects those under the influence of rare beauty prevented an upset. Finally the creature was in a glass jar, which forthwith became a new kind of sun radiating all the colors in the rainbow. At last I had it—*Hermissenda opalescense*, the Joseph of nudibranchs, for its coat rivals the one that changed history for the Tribes. Very carefully I handled it, remembering that, when irritated, it temperamentally pretends to commit suicide by tearing itself to pieces. What it really does is to cast off its cerata, leaving it as the red rag for the bull-headed enemy, while its naked inconspicuous slug body slinks away to safety,—but I did not want the perfect unity of the whole to be broken up.

What an infinite care and delicacy of execution went into this little slender creature! Distinct lines of opalescent white streaked down the back. At the posterior end they seemed to be as one, but as they reached the first group of cerata, they bifurcated and continued as two lines parallel to the mid-dorsal line, and when they reach the bare portion of the back between the anterior and posterior group of cerata they spread still further, allowing room for a brilliant splash of orange to show. The orange line ran between them in a thread of color until it approached the sense organs; then it became a vivid patch. Once more the three lines went forward, but the orange streak slowly died out, while the two parallel iridescent streamers reached to the end of the tenacles. Four other opalescent lines ran the entire length of the body, two laterally on the dorsal side,—these can be seen between the groups of cerata,—and two which appeared on the ventral lateral margins of the foot, and joined the mid-dorsal lines at the base of the tentacles. The cerata were gray with a brown core and with white-tipped ends, just below which was a small orange mass. A white opaque line limned them into things of beauty.

One could sit for hours before this glass jar of mine, and work out new beautiful patterns from my hermissenda. It was a proof, to me, that the artistry of little things has a delicacy and perfection that larger things cannot achieve. But one cannot end the day with two nudibranchs, so I pulled up the anchor and rowed to the cannery dock at the village to get whatever species might be clinging to the pilings.

The third piling gave up from its mass of sea anemones, sea squirts, algae, limpets and mussels an old favorite, *Triopha carpenteri,* which had been named by Stearns. This creature was larger than the usual run of nudibranchs, and was about four inches long. With its yellowish white body, with clavus of the sense organs partially translucent, with posterior end of the foot tipped with light orange, it was a symphony in yellows.

The branchial plumes and tubercles were flecked with the same color. Curiously enough, specimens which were later dredged at about twenty meters showed much darker shades of body color, with correspondingly brighter orange trimmings.

I was about to go home, satisfied with the morning's work, when suddenly a tiny white ring on the blade of a piece of kelp drew me like the sun draws plants upward. An egg mass of nudibranch! Where was the creature itself? All over the *Nereocystis lutkeana* I hunted, and in among the specimens of a bryozoan which encrusted the kelp, I lifted a small mass which appeared like a flattened drop of jelly, and examined it with the hand lens. Here it was, and a new one to me. Hardly any other specimen had seemed to have such marvellous protective coloration. It was elliptical with an arched and smooth back. The entire dorsal surface was marked with pigmented spots of green and henna which created the effect of a rich mosaic. The heart could easily be seen pulsating just anterior to the papillae on the dorsal side, and the head with its two tentacles lay between the mantle and the foot which concealed it. It was a find.

FOUND AT FORTY METERS

Called Pleurophyllidia lineata *for short. It is a striking sea creature*

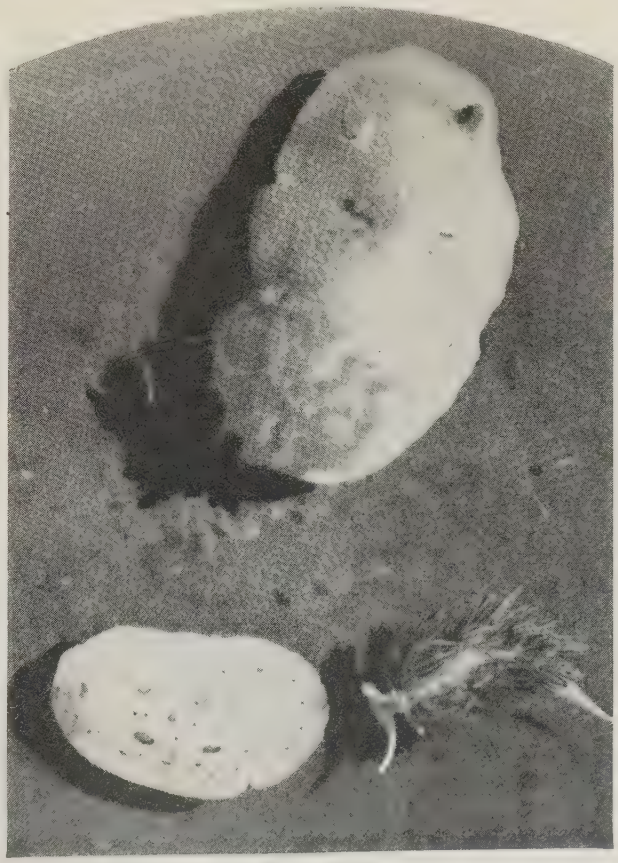
This little nudibranch belonged in the Family Corambidae, and not being able to find a description of this particular species, I gave it the name of *Corambe mosaica.*

During three summers of collecting, subsequently, I have never found one larger than five millimeters long, while even the smallest appeared, under the microscope, to be as perfectly executed as the largest. But this creature taken from the kelp was my first, and I experienced again that extreme thrill which comes only to the successful collector.

Four nudibranchs! Surely it would be fortunate to stop here. And there were the factory whistles, raucous in their determination to tell a machine world that workers must lunch. But what cared I for lunch, when the waters, lapping upward and receding from about the green, barnacled pilings recurrently revealed new wonders to explore? What does food matter, when the tiny creatures of the sea are waiting for you to fetch them forth from their hiding places to admire the rare delicacy of their bodies? Habits are strong, however. I slowly and reluctantly began to row back toward the biological station, my mind still in a whirl from the success the bright morning had brought. What marvelous little creatures! How often had I searched for them, to discover their secrets of life! I grew reminiscent as I rhythmically bent forward and back with the oars.

Those unversed in the subject may be interested to learn that the nudibranchs belong to the Mollusca, and are not only close relatives of the clams but also cousins to the octopus or devil fish. They are members of the class Gastropoda, that have their stomachs in their feet, and horn-like protuberances on their heads at the end of which are sense organs. The Nudibranchiata have no shells, as do most of this class, and take their oxygen from the water by means of naked gills, or through a mantle. But once one has become interested in these creatures, his troubles commence, for he straightway must go forth to find for himself, and devious are the paths of those who hunt for nudibranchs.

As I rowed homeward in my complete happiness, I recalled some of the other occasions when these little animals born probably so far back in the dim beginnings of evolutionary change caused me to rise before the sun and chase over restless waters. I remembered the time when the

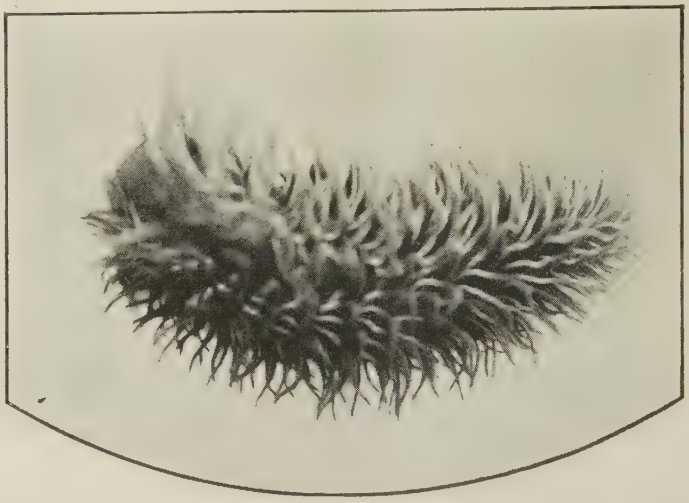


NUDIBRANCHS ALL

Above is Anisodoris nobilis, *below, left, a member of the Doridiidae family, and at the right beautiful* Hermissenda opalescense

good ship *Medea,* loaded to her gunwales with professors, students, collectors and a sane crew, headed for the channel off Canoe Island in Puget Sound to dredge out the little known wonders of the sea. Cable sang through hawse-pipes and chains rattled on winches as the dredge sank to the bottom; the power engine grunted and protested as the partially filled dredge creaked to the surface. The great netted sack lifted dripping to the deck, the cutting of a rope opened it, and then like a ravening pack of wolves on a sheepfold, our hungry collectors dove into the mass of plant and animal life that littered the boat. Like boys striving for money scattered into a crowd they grabbed for the sea urchins, chitons, mussels, crabs, sea cucumbers and kelps. I alone abstained. There were no nudibranchs. Three times that morning the cables spun downward; three times the great net gave up its booty, and still not a nudibranch. But when the second load of the afternoon spread slimily over the deck, I fell on a soft brown and white mass caked with sand and mud, and snatched it for my own. In a bucket of sea water it became transformed, as was the old hag kissed by Prince Charming; it expanded into a beautiful specimen of *Pleurophyllidia lineata,* a queen among nudibranchs. We gathered round, we mud-caked collectors, grimed from head to foot, to pay homage to this henna and white creature with the wavy striped surface, and to acclaim the day a success.

The Puget Sound Biological Station loomed in front of me, and I ceased my reminiscing, delightful as it was. The oars cut through the white-brown foam and into the spindrift; the boat grated on the sand of the beach. Mt. Rainier, my lady of the snows, smiled quite complacently and condescendingly at me as I trudged up the beach with my treasures. The Cascade Mountains, purple here and there with a shadow from some tiny cloud, were a splendor of pillared rock. Before me was the great expansive beauty of open spaces, while under my arm the more delicate and as marvellous artistry of the tiny creatures of the sea. Which was the more perfect? Together, they represented nearly the sum total of the beauties of Nature, the addition of the great and the small; and what more could there be?



AEOLIDIA PAPILLOSA
He takes the role of the poodle dog of the sea

So ended, for that day, my hunt of Nudibranchiata. Like a conquering Alexander, I swaggered home, booty-laden.

BIRDS *in the* HAND

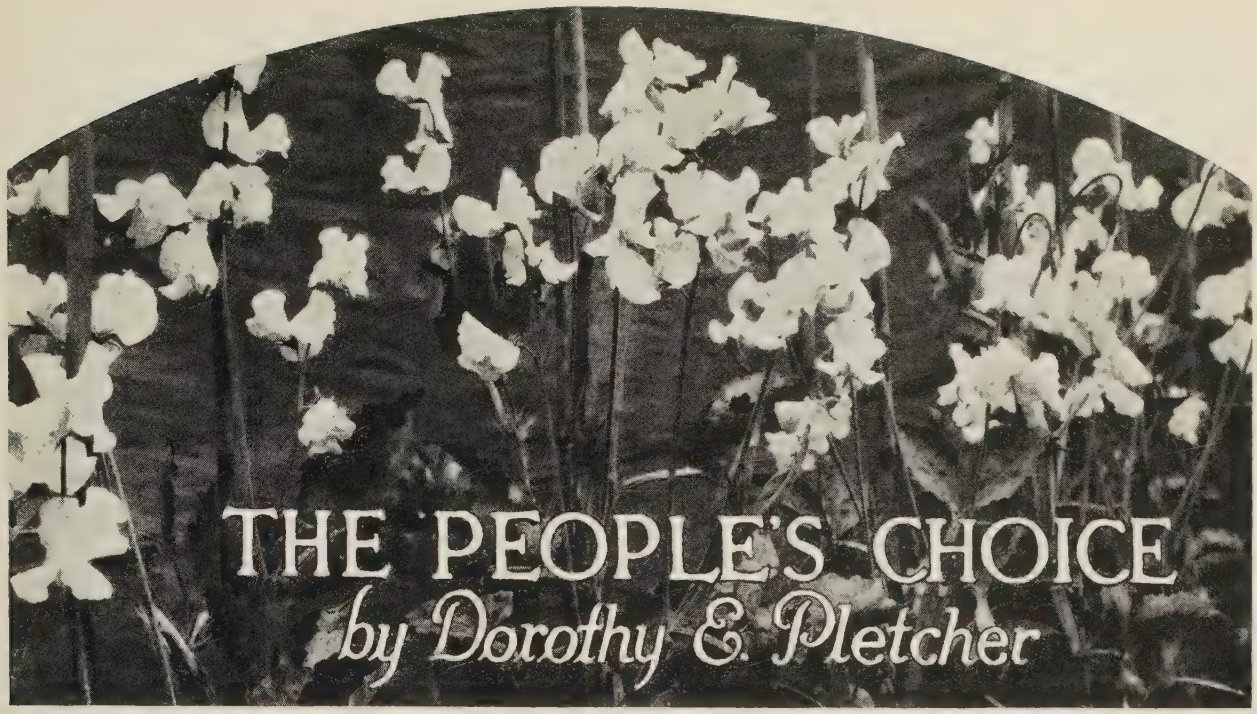
by J. Wilbur Magann

Last summer on a bright, cloudless Sunday afternoon, I discovered two young cedar waxwings taking their first lessons in flying. I moved them into the sunlight and, while they were resting, took several pictures. Suddenly their mother appeared in a tree overhead and gave her distinctive twittering whistle. Immediately there came a faint answer from the youngsters at my feet, and I moved backward a few feet to see what would happen.

The mother eyed me critically, and, apparently satisfied she dropped down with a mouthful of small red berries which she started feeding to the twins. I raised my camera for a picture but she showed her disapproval by flying up into the tree again, scolding me, and then flying a short distance away.

NO GREATER FAITH HAS ANY BIRD THAN THIS
That she feed her young on a human's hand. Such faith had this cedar waxwing

Growing impatient for her return and trying to keep the would-be flyers in the sunlight, I picked them up and held them in my hand. A few minutes later their mother again announced that dinner was ready, and the youngsters replied that they were ready too. As I waited again, I was quite surprised and thrilled when my hand became an open-air dining room while the waxwing lit on it and tried to fill the cavernous depths of her twins. Three or four courses were served before the meal was completed and the birds released.



THE PEOPLE'S CHOICE

by Dorothy & Pletcher

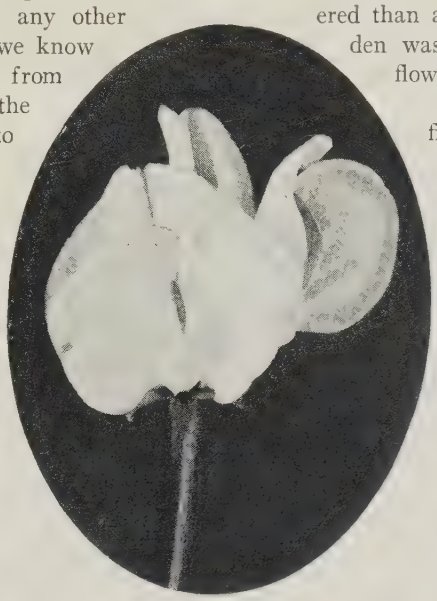
J. HORACE MCFARLAND COMPANY

In 1699, when Franciscus Cupani, in strolling about through the neighboring fields one day, chanced to find some sweet peas growing wild on the island of Sicily, and sent a packet of their seeds to a Dr. Uvedale at Enfield, England, he was unknowingly introducing a flower which has never ceased to charm and interest people in all stations of life. Cupani was a devout Italian monk whose recreation seems to have been exploring the outdoors and experimenting in the thrilling mysteries of botany. Unfortunately, that is about all we know of this religious man.

What of the famous seeds he sent to England? What were their flowers like? If one is interested in the romance of creating new flowers, let him read the story of the sweet pea, for its rise and development have been more rapid, perhaps, than that of any other flower. In fact, the sweet pea that we know today has changed almost entirely from its original self. A search through the old records has led the botanists to suppose that the original sweet peas were colored a purple maroon, had quite small flowers which were borne in twos on short stems, and were sweetly scented. With such definite information at hand, it is surprising that we can find no other trace of our little flower until a hundred years later, at which time five varieties had supplanted the original one.

What had happened in the meantime? Who was responsible for this change? Everyone is extremely hazy on this point. Although sweet peas appeared listed in English seed catalogues during the eighteenth century, it was not until the latter part of the following century—in 1877, to be exact—that Henry Eckford of Shropshire, England, steps into our story with his flower miracles. Many like to call him "the father of the sweet pea."

Having worked successfully with a number of other flowers, Eckford turned his energies to the heretofore obscure sweet pea. Experimenting by means of cross-fertilization and selection, he soon obtained new colors and larger flowers. In fact, he even changed the very structure of the flower, at the same time keeping its sweet scent and valuable quality of flowering generously. During the succeeding twenty-one years, known as "the Eckford epoch," he made the world a present of seventy-five new varieties of unusual coloring and size, known as "grandifloras" because they were larger flowered than all earlier varieties. No English garden was considered complete without these flowers.



W. ATLEE BURPEE COMPANY

CUPID SADIE BURPEE

One of the most beautiful of the early pioneer flowers in sweet-pea history

Stories of the beauty of Eckford's flowers had reached America, and in the "gay nineties" the sweet pea invaded our country, taking it by storm. And then, at the dawn of the twentieth century, came the greatest surprise of all in the form of our modern type of waved or Spencer sweet pea. In fact, flower-growers are still referring to it as one of the "greatest unexplained enigmas of horticulture." Without any warning this new type of sweet pea made its appearance, and strangest of all, made it in three different places in England in the same year; that is, in Earl Spencer's garden, in Northamptonshire, whence the name of Spencer; at the home of Unwin at Cambridge;

W. ATLEE BURPEE COMPANY

AMERICAN QUEEN

A clear, salmon colored beauty with bright deep-rose wings, that Mr. Burpee developed in 1902. It is a Grandiflora

and among Henry Eckford's flowers at Wem, in Shropshire. Although these three names are luminous in the life story of the sweet pea, to Mr. Silas Cole, gardener to Earl Spencer, falls the credit of discovering and introducing this new type which he named "Countess Spencer."

Just exactly what was this change in the appearance of the sweet pea important enough to cause such a commotion in the flower world? one is frequently asked. To inspect the flower structure for a moment, notice that the standard or back upright petal of a modern sweet pea is wavy or frilled, a feature that gives the flower its airy, butterfly appearance. Before the advent of the Spencer variety, there was no waviness, the standard being flat and smooth. In addition to its frilliness, this new variety was one-fourth larger than any other of its fellows. Try to imagine, if you can, a small sweet pea without this wavy quality,—only a flat, characterless flower comes to mind. Small wonder that flower-growers allowed themselves to become enthusiastic.

This remarkable change came in one of Mr. Eckford's varieties known as Prima Donna, a type that gave four-bloomed sprays and was very lovely in its way —quite an appropriate flower to have the distinction of being called "the progenitor of all modern sweet peas." In a row of "Prima Donnas" the charming "Countess Spencer" first raised her head, astonishing everyone with her saucy frills and—scornfulness of being the product of artificial cross-fertilization. It really was a very delightful joke on the botanists, and at times when the little lavender and salmon-colored flower-heads are bobbing and nodding in a gleeful, vagabondish way, one rather imagines them to be laughing together, even yet, over the trick they perpetrated.

In the meantime, what was America doing? Our California, never willing to be left out of a flower story, and not wishing to have us outdone by England, obligingly discovered in 1893 that it was producing the world's first dwarf sweet peas—and what a stunning array of colors there were. They had a mat of low foliage, and although the blossoms were of the usual size, the stems were short.

Straightway various experiments in California proved that that state was happily constituted for growing sweet pea seeds as they had never been produced before, in ton lots. At present two thousand to three thousand acres are set aside exclusively for seed culture, a season's yield amounting to six hundred thousand pounds of seed. And, for the benefit of the mathematically inclined, it might be interesting to mention that this huge crop is capable of sowing over three thousand square miles of sweet peas. Obviously production on such a large scale led to experiments which resulted in many new types.

W. ATLEE BURPEE COMPANY

AN OLD GRANDIFLORA

Lord Roseberry, a rosy magenta, is another introduction made by "the father of the sweet pea," Henry Eckford

America, like England, formed a Sweet Pea Society, back in 1909, and in that year, the Society, eager to broaden interest in its flower, established trial grounds at Cornell University where in cooperation with the Department of Horticulture of the New York State College of Agriculture they tried out new varieties and eliminated the numerous synonyms on their lists.

So much has been written on the subject of how to grow sweet peas successfully, that doubtless

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FOR THE HOME

No flower can improve on the touch of delicate beauty the sweet pea gives

many are rather timid about trying it. As one amateur gardener gloomily complained recently, "It does seem that the sole subject of garden authors is to impress the reader with the fact that this business of gardening is an extremely difficult matter, only to be attempted by experts." But really, the gentleman was entirely too pessimistic. As a cure for garden cynicism, there is nothing better than refreshing our souls with the lovely colorings and perfume of sweet peas.

Undoubtedly the wise amateur gardener's first question will be, "What is the best location in my garden for sweet peas?" And right here the writer would make an earnest plea. Let us get away from making uninteresting gardens. What looks well in our neighbor's garden will not necessarily fit into our own. No matter how miniature a plot of ground, it is not too small to express its owner's personality. Countless gardens may be compared to certain people, who, in following fads with their standardized clothes and mannerisms, present a dreary aspect of monotony. It would be a pity to forego this opportunity of expressing ourselves. A garden simply must have meaning; the garden that is not appealingly different is hardly a garden at all. So, gardeners, figure out all by yourselves just how you can arrange your sweet peas most artistically and display your creative ability. They warrant the effort.

It is ideal to have sweet peas where they will not be excessively shaded from the sun by huge trees or the house, but at the same time make sure that they are conveniently near a hedge or shrubbery which will serve the dual purpose of partial sunshade and windbreak. Let the rows run north and south so that the flowers will get as nearly uniform sunlight as possible.

Although the average person thinks of the sweet pea as valuable only for a cut-flower, there are innumerable ways in which to make it serve decorative purposes. If one has a fence that has seen better days, a garage not quite aesthetic, a bare wall, a stiff, unrelenting porch, or a yawning emptiness in the garden, how could all of these be more effectively dressed up than with rows of sweet peas? Or, if there are no objects to screen and the formal effect of planting in rows seems too stiff for the rest of the general plan, why not arrange our vines in clumps at the back of flower borders, in front of the shrubbery, or in the midst of beds of perennials? Many gardeners like to keep them apart in a cutting garden, but it is selfish to deprive the remainder of the home grounds of the colorful masses sweet peas provide.

One could not have a better opportunity to display his individuality than in the selection and arrangement of colors. In planting sweet peas near other flowers it is of course necessary to see that they harmonize with their surroundings, but when placing them in rows by them-

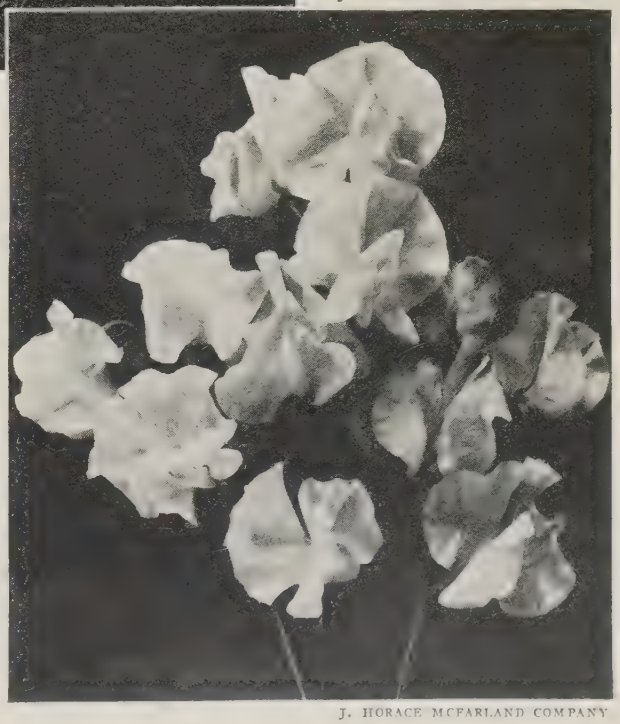
(Left) ROW ON ROW

Here they are, in majestic array. But they serve as well for fence corner or side of garage

THE FINAL PRODUCT

Only after centuries of training did the wild sweet pea become the cultured creature of today

J. HORACE MCFARLAND COMPANY



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selves, the gardener can revel in working out attractive contrasting schemes. If planted in clumps it is then more safe to have only one color to each clump. Those who prefer a blending of colors might be pleased with the results from combining cream with orange, orange-cerise or lavender; or, perhaps, lavender with orange, salmon-cerise or salmon.

The use of color in the garden, it would seem, is enjoying quite a vogue now, and every season finds restless, beauty-loving people changing the color arrangements of their gardens as assiduously as they redecorate the interiors of their homes. One horticulturist delightfully refers to color schemes as "the measles of gardening", because, he explains, "everybody has them."

The royal road to success in growing sweet peas—how shall we find it? First, be sure to prepare the soil in the fall, as this gives it ample time to settle. If the peas are to be grown in rows, make a trench eighteen inches wide and of about the same depth. Throw the top-soil aside while the bottom of the trench is broken up with a fork or pick; then, if your soil is heavy, fill the bottom of the trench with cinders for drainage. Fill in a layer of five or six inches of well-rotted manure, after which replace the subsoil, followed by the topsoil, and over all spread an application of about two pounds of bone meal plus four pounds of hydrated lime to each ten feet of row, in fertilizing.

J. HORACE MCFARLAND COMPANY

FOR ALL TASTES

Grandifloras, dwarfs, plain flowers and ruffled,—there's no lack of variety in color or form

J. HORACE MCFARLAND COMPANY

(Right) MIRIAM BEAVER

One of the most exquisite varieties, especially well adapted for brilliant cut flower display

FLUFFY RUFFLES

One of Burpee's latest products. The initiation of ruffled varieties gave the sweet pea fame

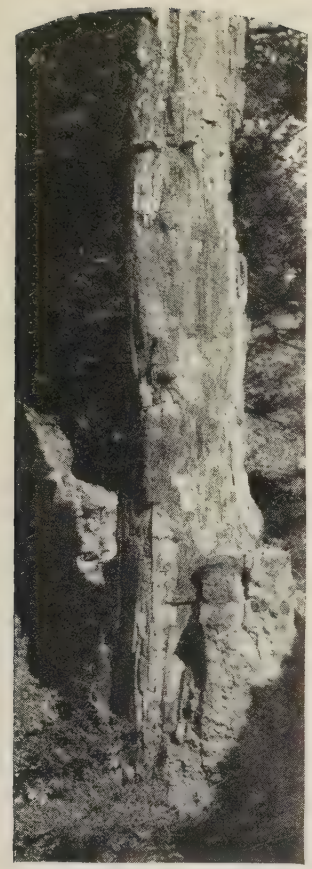
W. ATLEE BURPEE COMPANY

When to sow the seed? As early as possible in the spring—usually between the middle of March and the middle of April. Although all exhibitors sow the seed in the autumn, and raise their plants in greenhouses, early spring planting is the general rule with the average flower-grower. It is possible to plant the varieties from dark-colored seeds earlier than those having light-colored ones. Because our trench was prepared the preceding autumn, it is only necessary at this time to dig down four or five inches. In this trench one can easily raise two rows eight to ten inches apart and train them on one trellis. Have the furrow three inches deep, placing the seeds two or three inches apart. When the seedlings have attained a height of three inches, thin them out to four inches apart. It is possible to secure more rapid germination simply by soaking the seed in warm water for a whole day before planting.

The trellis or support that is to be used for the young vines ought to be put up just as soon as the plants appear above the soil, for if they once droop to the ground, it is rather a difficult matter to persuade them to climb again. Whatever the type of trellis used in training the vines, the most effective location would be in front of a mass of green foliage—a perfect background for these gaily-colored flowers.

Although in the way of pests we must expect the

(*Continued on page* 129)



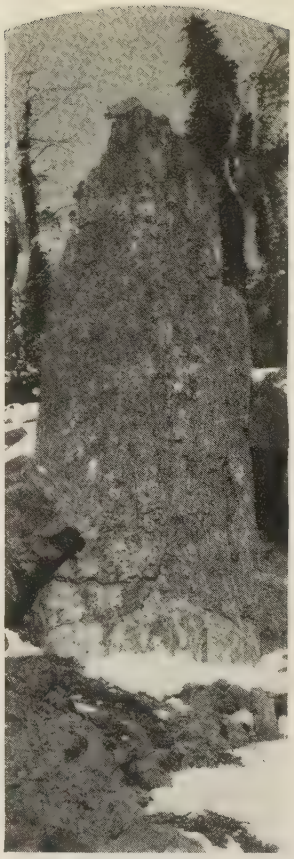
A MEMORIAL TO ITSELF, CARVED IN LASTING STONE

STONE FORESTS of the Gallatin

Where Mighty Ruins Hint of a Glorious Past

By Fred Morrell

Photographs by the Author



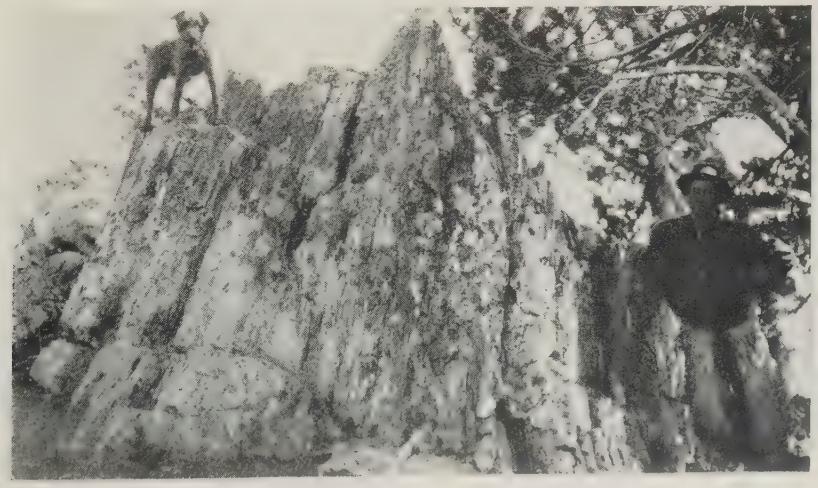
DID SOME MEDUSA TRANSFORM THIS ANCIENT GIANT?

HIGH up on the Yellowstone-Gallatin Divide in Montana is a petrified forest which in some ways excels those of Arizona or the Yellowstone. It extends over an area of thirty-four thousand acres at the headwaters of the beautiful canyons of Buffalo Horn, Tepee, Black Butte, Dailey and Specimen Creeks and is easily reached by trail up any of these sparkling mountain streams. The entire area is rugged and mountainous, and the scenery is comparable to the best in the Rocky Mountains.

The Divide averages about ninety-five hundred feet in altitude. From it are afforded magnificent views of the Teton Mountains of Wyoming, Tom Miner Basin, and many lakes, rivers, valleys, peaks and mountain ranges.

Forests of fir, spruce and pine typical of the Rocky Mountain region are found at the lower elevations. The trees in these living forests compare favorably in size and development with any others that may be found in the many millions of acres of Rocky Mountain timberlands. But they are pygmies beside the giants that grew there many millions of years ago.

What stories of the past these stone trees hold for him who can read the language of time! Scientists have determined that within the petrified forests of Yellowstone Park are sequoias, oaks, bay trees, magnolias, persimmons and other species which grow only in climates far more moderate than that of Yellowstone Park. A part of the area adjoins the Park on the north, where snow lies ten feet deep during the long winter, and frost may occur on any day of the year. Ancient magnolias, bay trees, breadfruit, walnuts and the other species



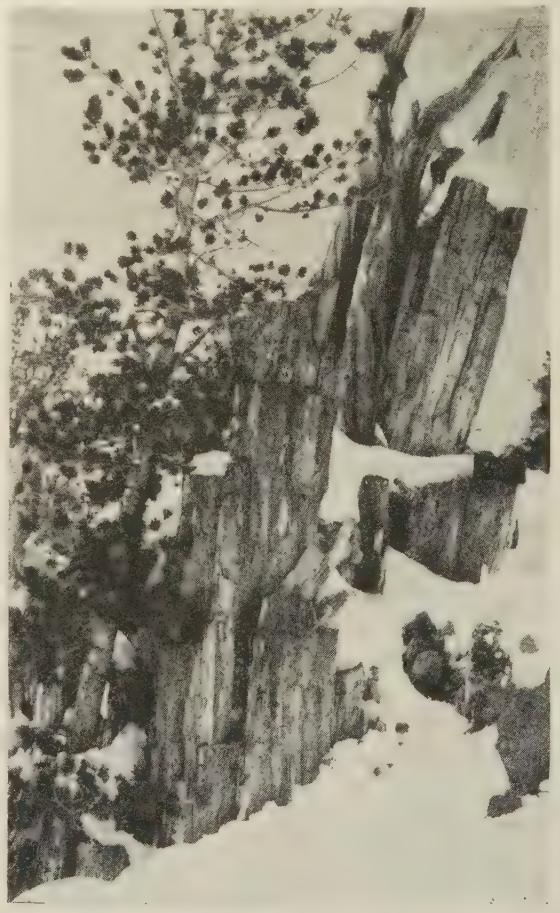
HERE ARE THE STILL-SOLID REMNANTS OF A PREHISTORIC FOREST KING OVER TWENTY FEET IN DIAMETER

Truly Titans lived in the past. They have proved invaluable in giving an insight into conditions of the long ago

still standing in the stone forests must have had warmer conditions under which to prosper. And so we know that in the time when these forests were living the summers were longer and the winters far milder than they are now. Another world existed, far different in all respects.

Geologists tell us that forest after forest grew in this region millions of years ago, one forest being covered by volcanic eruption, another growing on top of it, the second forest covered by another eruption and then a third growing, until as many as fifteen forests now turned to stone are disclosed in the Canyon of the Yellowstone. What a splendid method Nature has used to preserve this record of past life! To sit on one of those stumps on a beautiful summer day and gaze off to where the mountains meet the cloudless sky, miles and miles in the distance, is to comprehend space as fully as the limited mind of man can comprehend it. It is so many miles to the farthest mountain, and yet it is nothing at all to the space that is beyond. And to contemplate the living trees growing beside those of stone is to appreciate time to the full extent that one can understand it. The growing living tree hundreds of years old that stands beside an ancient petrified monarch was once a seedling. And yet the time since it first pushed its tiny needles through the leaf mold of its ancestors is as nothing to that elapsed since the stone tree beside it first struggled up through the volcanic ash on which it grew.

Like the ruins of some Pompeii these shattered hulks of former greatness jut out from the soil which once covered them. The plant life of the present era pushes up on all sides, disregarding; it does not even pay the lip service which busy tourists render to the stone remnants of the human past. The new growth even finds its nourishment from soil composed of the decayed remains of those trees that for some reason or other were not metamorphosed into lasting memorials of themselves. There is no hero-worship in Nature. Only those who survive are given consideration and the present gives way to the past. But though these once supreme forest dwellers are humbled and crowded by the fast-growing upstarts of today, yet they are greater even in their fragments than the others can ever hope to be. No matter how thick the tangle becomes, or how quickly the youngsters rear their heads, the luxuriant, glorious age in which they dominated the land cannot be forgotten. Until the stones of these memorials crumble under the strain of ice and water, and mingle once more with the earth from which they came, they stand in memoriam.



THE OLD AND THE NEW

The youngster is good-sized; but what a pigmy he is beside the shattered stone monarch!

ON THE YELLOWSTONE-GALLATIN DIVIDE

The waters of time have lined and furrowed the cliff, and trees cling precariously to the ledges

WILD ROSE

Bring On Your Votes

Rose and Columbine Need Support

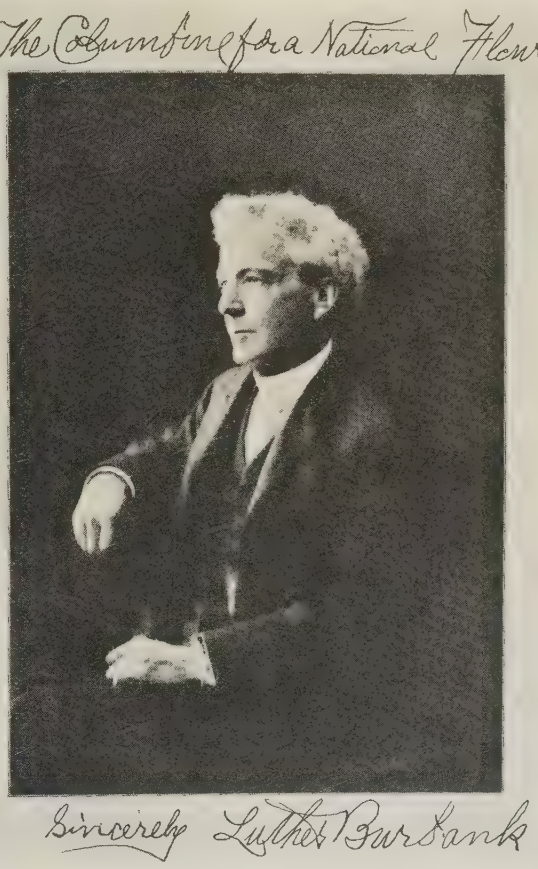
Your friends, fellow-club members, your children—see that they vote in the National Flower Campaign. There must be a conclusive, definite choice made by the American people. All returns and requests for information go to National Flower Editor, Nature Magazine, Washington, D. C.

COLUMBINE

THE WILD rose with 3,576 votes to 2,697 was leading the columbine, and the goldenrod, 1,669 ballots behind the leader, had wrested the honors from the early third place holder, the phlox, with 1,370, when the first scattered returns in the American Nature Association National Flower Poll were counted just before going to press, three weeks ago. When this count was made a total of 13,792 votes for 47 candidates had been cast by the nation.

The ballots were rolling in a thousand a day at the time of this count, so undoubtedly the total has been doubled by the time this is read, and startling upsets may have taken place.

The American Nature Association is gratified with the early results. They show a deep interest in wild flowers among the people. We wish, however, a wider interest—a vote that will indicate beyond any question the choice of America. After the national flower is once chosen, there can be no divorce. No candidate should be raised to the floral pinnacle until you, as a Nature lover and American citizen, have expressed your choice and seen that your friends have voted. But though there has been no date set for closing the poll as yet, we can wait only so long.



AN ADVOCATE OF THE COLUMBINE

Though not endorsing any flower ourselves, we find much interest in the opinion of the late Luther Burbank, as shown in this picture which he autographed and presented to Miss Carrie Van Brunt, of Brooklyn, N. Y., several years ago. We are indebted to Miss Van Brunt for its use

To get out the full American vote we must depend on our friends and on Nature lovers to a large extent. We can tell the people about the poll, urge them to vote, and give them ballots through Nature Magazine; but in many cases, we cannot do enough to overcome the reader lethargy which can be pierced only by the voice of a friend. A vocal "Have you voted in the National Flower Poll?" will bring out more votes than a thousand words in type. If the one hundred and thirty thousand readers of Nature Magazine will register the choice of their family and one outside friend, the poll will be a success. If in addition, they will each carry the ballot printed in Nature Magazine to their club or organization and conduct a poll there, no shoestring candidate will be foisted upon the citizenry by the ballots of a few. The winner will have been duly elected.

It is the interest of such Nature lovers as Dr. George W. Finley of Brazil, Indiana, that is needed. Dr. Finley, recently the victim of an automobile crash, lay in a serious condition in his home town's Community Hospital. Though unable to move himself, he instructed his special nurse, Miss Thelma Frye, to conduct a poll in his name throughout the hospital. Doctors, nurses, patients and even visitors cast their ballots, and more than sixty national flower votes were rolled up. Dr. Finley is recovering rapidly, and undoubtedly when well will rout out a much larger volume of votes, but those he sent from his hospital will be appreciated the most of all.

Such youthful enthusiasm as is being shown by the Girl Scout troop at the School for Blind at Faribault, Minnesota, will make the campaign successful. Miss Emiline Brandeen, the troop captain, sent for information and ballots so that her scouts may vote. These students will use touch and smell to replace the missing sight; and their enthusiasm should induce all other Girl Scouts, Boy Scouts, and school children to vote, too.

Just how many true Nature and wild flower lovers are there in the nation? The total vote will tell. On, then, with the poll, and let enthusiasm be unconfined.

(Left) **A CAMEL WITH THIRSTY ROOTS**

One of the garden sculpturings that have made famous the home of a resident of Crete, Nebraska

PEACOCK SPREADS ITS FEATHERS

An instance of what happens when garden shears are set to work at an interesting kind of home decoration

When A Sculptor Found the Shears

Photographs from Emma H. Morton, Portland, Oregon, and George F. Paul, Chicago, Illinois

It rather looks, from these two pages, as though someone had left a pair of garden shears lying about and that the artistic urge were too great for some itinerant sculptor to deny. This, however, is not the explanation. These several instances of garden topiary are the work, in some cases, of a faithful English gardener who for forty years has cared for the gardens of Mrs. Pendray in Victoria, B.C., and in others of a citizen of Crete, Nebraska.

So famous have the "sculpings" in Mrs. Pendray's garden become that

(Left) **TIMID RABBIT**

From a permanent perch on a cedar tree, the bunny observes the situation

WHILE IN VICTORIA

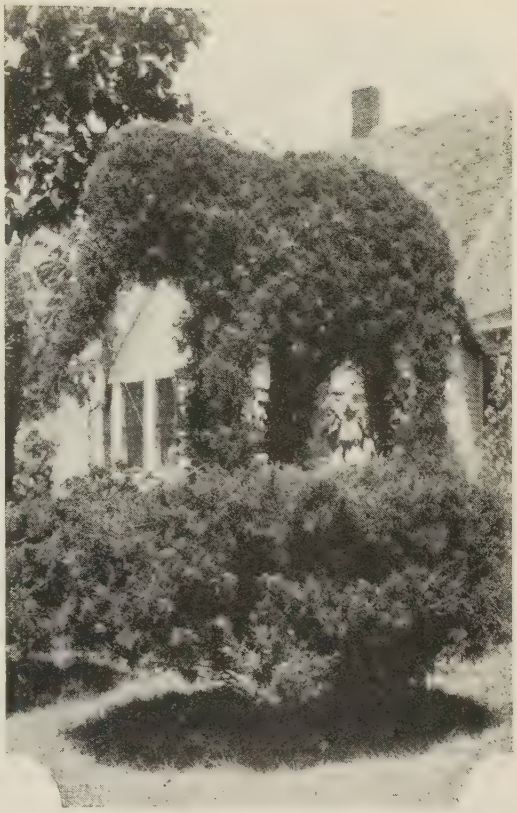
In the gardens of Mrs. Pendray are (left to right) a "merry widow," turtle and rooster

WHERE A GARDENER TURNED SCULPTOR

For forty years this Victoria, B. C., man has tenderly cared for the eccentric shrubbery of his garden

they are visited by many tourists to Victoria, who marvel at the carefully-tended shrubbery. The gardener is a Nature lover and most of his subjects are drawn from wild life, including a turtle, squirrel, cocks, rabbits and many other creatures, not to mention the life-size bear in sitting posture. Our garden sculptor must likewise keep up with the prevailing modes because he has fashioned a "merry widow" in the garden and must clip with the changing styles. He has refused, however, to yield to the fashion demand for the short skirts.

Although Crete, Nebraska, is a bit off the beaten track, one resident has given it distinction with his shearing of the small cedars in his large yard. This sculptor has also drawn upon outdoor life for his subjects and has a circus in his own dooryard. There is Jumbo, the elephant, in characteristic pose, and a proud peacock spreading his glorious tail. He doesn't have to walk a mile because near his doorstep he has a camel whose thirst is satisfied through his roots instead of in the normal way. Paul Revere, atop his trusty steed is among his sculptural achievements. A setter dog "on point" is one of the most commented upon subjects.



WHY GO TO THE CIRCUS?

Here is one Nebraskan who does not need to stir from his home. But there's no fun lugging buckets of water for this elephant

THE SETTER POINTS HIS QUARRY

One of the most lifelike sculpturings of the gentleman of Crete, Nebraska

JUST A BEAR POSSIBILITY

Which only goes to show what can happen to a shrub if you use the shears in proper fashion

AMERICAN MUSEUM OF NATURAL HISTORY

THE BIG NOISE OF THE JAMAICA NIGHT
Despite his size, however, the giant tree-frog for years remained little more than a call, and many scientists sought him

ON THE TRAIL *of the* SNORER

Hunting the Giant Tree Frog in Jamaica Tangles

by Emmett Reid Dunn

THE empty banana truck on which I was riding up the mountain from Kendal to Spaldings in Jamaica stopped for a few minutes, and I listened to the whistlings and clickings that came, like meaningless static, from the night around me, trying to analyse them into the mating calls of frogs. Then, suddenly, from the wooded hill to the right there came a single guttural call, sustained and throbbing, and loud, so loud that mental comparison can evoke only the Red Howlers of Veragua, lions at feeding time, or a log-cock working on a hollow tree. And at once I thought: "That . . . . . that must be lichenata."

"When they heard our bulls bellow, the Skraellings ran away". And the voices of the smaller fry faded into silence at the sound of that one great and unrepeated cry.

The truck started again, and I thought, as I had often thought before, of *Hyla lichenata,* the giant tree-frog of Jamaica, known for one hundred and seventy-five years, and yet so little known. It is one of the largest tree-frogs in the world, but it seemed to be the rarest. It was discovered in 1750, but not described until 1850, when the second specimen was taken. Between 1850 and 1863 a number found their way into museums, but where or how they were caught was not recorded and the two original localities, Hanover and Bluefields, at the extreme west of the island of Jamaica, remained the only definite, known habitats. No more were caught for years and by 1910 most of those in museums had gone the way of all flesh. Finally the Harvard Museum received one "through the kind efforts of Dr. Grabham from Mr. Panton of Spaldings." So I hunted up Spaldings, and on the way I heard what I heard.

All of this had been luring me to Jamaica since I first began to follow elusive beasts in far places, for a creature once discovered and then lost to sight is even more tempting than the hope of one quite unknown. I was fresh from two successive summers in Cuba, where good results had attended my wanderings. No one had hunted in Jamaica. And there was *Hyla lichenata* . . . . and Mr. Panton of Spaldings.

Once at Spaldings, and the necessary arrangements made, I set out with a hired boy, Dan Wright by name, for a tour of inspection. We covered much ground, both open pasture land and thick forest. He cut down

with his machete or "cutlass" numbers of "wild pines", epiphytic or "parasitic" plants which grow on the trunks or limbs of all the trees in this region of Jamaica. These, with their flattened leaves radiating from a small base, hold as much as two quarts of water, and tree-frogs sit hidden in the interstices of the leaves. We caught quantities of the common brown tree frog and the tiny green tree frog in these plants. We also found something new in my knowledge and my experience,—queer, flattened-out, long-tailed tadpoles swimming about in the water at the base of the plants. These were of two sorts,—black ones, with golden upper eyelids, and pale creatures with red eyes. The former turned out to be the green and the latter the brown tree-frog. They live in a glycerine-like fluid which is a mixture of water and the jelly coats of the eggs, and which is probably less likely to evaporate than pure water. Here they swim about high above ground and eat the eggs laid by some later frog and apparently each other. Only a few ever become frogs, and there is no insect life in this slimy fluid.

DIGGING FROGS FROM THEIR WILD PINE HOMES

Brown, green, and blue-covered tree dwellers were found calmly sitting in the interstices of the leaves

In the thick woods we found a few specimens of a third tree-frog and its tadpoles. This variety was pale yellowish green with a dark bar between the eyes and a queer pointed snout. It was of a size between the two others and was an entirely unknown and new species.

A fourth frog also lived in the wild pines. This was a small blackish creature which, when first caught, had bright blue flanks and thighs. I was much surprised at the color, unique among amphibians, and still more surprised when I found it to be composed of slime exuded from the skin,—blue poison was quite new to me. This frog, discovered years ago by Dr. Barbour of Harvard, lays large white eggs, in batches of about a dozen, in the wild pines above the water line. These develop directly into tiny frogs without ever going through an aquatic tadpole stage.

The mountains of Jamaica are a waterless region. The plentiful rains sink directly into the porous limestone. There are a few natural ponds and many artificial ones, and here and there a tiny stream may appear in a valley and wander twenty-five or fifty yards before sinking below ground. In such places we found a few adults and many tadpoles of the giant toad, which was introduced from Barbados about a hundred years ago.

That night I went out with a flashlight to try and get a few of the ground species, and to identify some of the calls I had heard from the truck. Three calls I soon traced and found that they were being given by only two frogs, both of them handsomely colored tan beasts with red legs. The larger of them was responsible for two quite different calls, one when it called in the open, and one when it nestled in a crevice or hollow in the much eroded limestone rock. Two more silent and duller-colored animals were taken, a tiny one on the ground, and a larger one found usually on bushes. All four of these were new and unknown species, and all four belonged, as did the one of the blue poison, to a tropical group known as *Eleutherodactylus,* or the slim-fingered ones.

I heard the rattling call of the brown tree-frog, so like the call of its close relative in Cuba; and the telegraphic "tick-ticky-tick" which I later traced to the green tree-frog.

Then from the woods came the loud snoring roar.

IN THE HEIGHTS OF A HOLLOW TREE IS THE SNORER'S ABODE

Note the great disks of toes, and the bony head which blocks effectively the doorway of his lofty home

AMERICAN MUSEUM OF NATURAL HISTORY

I flew out of the pasture land and in among the thick tangle of tall trees and great rocks, heading for the place whence the cry came. When I thought I had reached it I waited and caught a few more of the frogs I had seen in the pasture. I tried to trace a high deceptive rattling call which sounded like a child's wooden ratchet, and which began low, rose to a high pitch, and descended again, so that it seemed to draw near, pass, and recede. I could not for the life of me tell whether it came from the ground or from the trees, or whether it was, after all, only a night bird flying by.

The author, now an instructor in Smith College, Northampton, Massachusetts, is one of the foremost in our newer school of Herpetology. Under its interpretation the snake or frog is properly regarded as a living creature with a certain allotted place in a Great Scheme, and there has developed an intense desire to learn more about this relation. The urge to discover some of these elusive secrets has led our author into many of the far places of the world, from tropic swamp to Alpine summit, and we are fortunate in being able to follow with him some of the pleasant paths he has blazed.

Twenty minutes and the loud call again. Nearer indeed, but I had missed the mark in the night and had to go twenty-five yards further. Another long wait and again I heard it, this time definitely from one of two or three tall trees and certainly many feet overhead and out of sight or reach. Such was that night one of slow progress.

Next day was a repetition of the first. From one wild pine in the thick woods, twenty feet above ground,—so high that we had to cut down a small tree to get them,—I got four tadpoles nearly full-grown. They were black, had legs with white warts on them, and were much larger than those of the other tree-frogs. These were certainly the tadpoles of lichenata. Here was information at least. The giant snorer bred in wild pines as did the other tree-frogs. Why had we not gotten them before? Obviously, I thought, because they frequented the higher plants. So with Dan Wright and his agile brother, Jocelyn, we tried to get the wild pines from high up in the trees.

For the rest of the second and the third and the fourth days we tried that. All to no result, save the increasing of my collection of species that I had gotten on the first day, and the discovery of eggs of the brown tree-frog in low-growing plants.

At night I would go alone with the light, and was exasperated time after time by the elusive ratchet call and by the loud snore from the tall trees. Lichenata remained a call and four tadpoles, and the ratchet-like voice was merely a voice in the night.

The morning of the fifth day there came a letter from Panton, now in Mandeville, telling me he had found lichenata in the hollow limbs of trees. His advice was to identify the tree from which the call came at night and to cut it down the next day. Also to write to one Manoah Brown, an old negro who knew the frog. I wrote the letter, and set out for the place whence most of the nocturnal calling had come, hoping to find a few hollows which might be investigated. Arrived in the thick woods we looked for likely places. I found a small tree with a hole at the height of my head. Poking with a stick was impossible so I proceeded to enlarge the opening with my bush knife. As I was hacking away there came clear and close from the left the familiar roar. "Him in dis tree, sah," was the immediate, excited response of Dan, pointing to one nearby. There was a hole in it about twelve feet from the ground. He climbed one of the great limestone rocks and poked in with a long stick while I waited below, nervous as a dog at point on hearing the call so close in daylight. There was no result of the stick work. I suggested a final poke . . . and out of the hole and over my head leaped an enormous tree-frog. I pounced on it, and then gloated amid general excitement and loud, strenuous hullabaloo.

I feasted my eyes on the great disks of fingers and toes, on the greenish-gray lichenous coloring, on the gold-flecked iris, on the white and heaving throat, and on the curious bony head, so obviously useful as an impregnable stopper for the hole once the frog had backed into it. Then I bagged him, and out of idle curiosity went on to finish the work on the original tree. Suddenly out of it came a second like unto the first. My hacking on the hollow tree must have sounded to the frog like the cry of his rival, and he had answered forthwith! Two in one morning seemed ample and we went back to the village to celebrate.

Next morning I got another, a small one, in a similar situation, and the following letter from Manoah Brown:

"Your note I have received and I hear all what you have said I will really look for some for you but as they dont easily to find I cant promise you to come tomorrow I will go in search tomorrow to friday then you will hear from me by Saturday. I will do that favor for you as many as you want you will get them

I am Dear Sir Yrs
(signed) Manoah Brown"

Brown came on Saturday, the eighth day, with several brown tree-frogs and one lichenata in bamboo tubes. He had been out all night locating the tree from which the lichenata had called and had cut down the tree next day and caught the frog.

On the sixth night I located the elusive ratchet call, which came from a tiny red-legged beast calling from within cavities in eroded limestone rocks in the thick woods. It was quite new and unknown and made six new frogs from Spaldings.

Search on the seventh, eighth, and ninth days and nights produced no more lichenata, nor any additional species or habits. Then I went home. I had succeeded beyond my wildest dreams in finding new beasts and strange habits, and while I had not many lichenata, I had gotten four tadpoles, a young one, and three adult males, and knew the breeding site, the adult habitat, and the call. This was as much as, or more, than I could expect in the short time I had, and I have many times felt more disappointed and less satisfied than I did when I left Spaldings for worse places and more prosaic pursuits. The big snorer of Jamaica nights went with me, and the undying memories of a successful hunt.

Is It Too Late?

Must the Ivory-Billed Woodpecker Join the Ranks of Extinct Birds

by Alexander Sprunt, Jr.

This is the first of four articles by Mr. Sprunt on birds facing extinction. They will supplement his popular group on the birds which have already passed into oblivion.

WHAT, think you, would be the impressions of those great naturalists, Wilson and Audubon, could they but return for a while, and roam the haunts which they pioneered in the early days of American ornithology? What of the virgin forests, the wide savannas, the heavily timbered slopes of the Blue Ridge and Alleghanies? What of the teeming hosts of passenger pigeons, the brilliant flocks of Carolina paroquets, the whistling bands of Eskimo curlews, and the high flying formations of whooping cranes? Would not the hearts of these men, who virtually gave their lives in the interest of the avian natives of North America, be broken at the present day attitude of so many of our citizenship, and the trend of our much vaunted twentieth century civilization?

Since their day this nation has accomplished much in wealth, invention, literature and science, but is it necessary for the natural wonders, and native wild life, to fade into oblivion, that these monuments to human industry rise ever higher? There may be many who would answer that it mattered little, whether they did or not. There would be others, an ever growing number, who would answer: No, a thousand times no!

Although our steadily diminishing forests, and our disappearing wild life, are matters for deep concern and alarm, it is a gratifying fact that there is an increasing army of those who are clamoring for a reasonable, sane, and systematic program of conservation, which will walk hand in hand with the advancement of modern day needs. This is as it should be, and great is the pity that the awakening did not come sooner.

The admirable work of various conservation organizations, and the enactment of the Federal Migratory Bird Act, have all combined to make the future welfare of our native wild life fairly well assured. There are, however, rapidly-vanishing species about which many are vitally concerned. Four birds particu-

larly, by reason of relentless persecution or the ruthless destruction of their haunts, have been brought to the edge of oblivion. Is it too late to save them? Have we awakened to their perilous situation, only to be unable to preserve them for future generations? And must we, in this very decade, witness their passing forever from the land of the living? The answer lies with us: what we do. What will we do?

Outstanding in this group on the ragged edge of extermination is the magnificent ivory-billed woodpecker, the largest of the family in the United States, and, sad to relate, the rarest. Many of our birds are dependent upon the forests, notably, the wild turkey and ruffed grouse. There is no bird of which this is so true as the ivory-bill. The turkey and grouse will probably remain with us indefinitely, being reared on game farms and large estates, but, with the going of the forests, the exodus of the woodpecker is absolutely certain, and beyond recall.

When the term forest is used, we must not think simply of a growth of trees. We must visualize something more than that, we must voyage into a fairyland that has itself all but vanished. An enchanted region of primeval, towering monarchs, whose fading ranks now embrace but few areas in this far-flung country. I live near some still remaining stretches of this wonderland,—the cypress swamps along the slow-flowing Santee and Savannah Rivers. This low country of South Carolina may perhaps be the last stronghold of the ivory-billed woodpecker. Who knows but what this splendid bird is here waging its last fight against the encroachments of its only enemy? What is the nature of the country in which they dwell and why should the bird be here?

To find the answer to this question, we must leave the roar of the city behind, pass the comparative quiet of the suburbs and outlying farms, and penetrate the peaceful tranquillity of the great river swamps of the low country. Here we are in another world. The brown river flows sinuously between the towering walls of gray-green trunks, swirling, eddying, creeping, on its journey to the sea. Here and there, a break shows in the tree-lined wall, a long "lead" or aisle of open water beckons us back into the mystic gloom of the somber, flooded forest. The bow of the dug-out turns down an inviting lane, the paddles dip softly, urging the craft ever deeper into the invisible and silent distances.

"ATOP ONE NEARBY TRUNK A BRILLIANT GREEN LIZARD, HIS HEAD HELD HIGH, WATCHES WITH BEADY, QUESTIONING EYES"

A pervading solitude reigns, the brooding spirit of the wild seems to hover among the high branches of the straight trunked cypresses. Swaying banners and festoons of Spanish moss bedeck the lofty heads and arms of these patriarchal trees. The water itself changes color, taking on a wine-brown hue, and stretching on like a mirror into the beckoning obscurity. On either side of the lead, here and there among the trunks, gnarled "knees" pierce the still surface, moss-covered, hoary, crouching like old, bent men under the years of solitary contemplation of the stillness.

Atop one nearby trunk a brilliant green lizard, his head held high, watches the silent passage of the dug-out with beady, questioning eyes. He fits here, this tiny reptile. He harks back to age-old days, when, in the rank, steaming vegetation of the long ago, huge, uncouth, long-necked monsters rolled and wallowed in the muddy lakes. He is an infinitesimal remnant, a tiny reminder of antiquity.

Suddenly, the gray gloom lessens, quickly the light grows stronger, brilliant sunshine falls like a torrent ahead and around us, as the prow emerges into an irregular lagoon rimmed about with trees. Clumps of buttonwood bushes grow thickly in green masses, floating logs, encrusted with closely-sprouting mosses, and waving tufts of grass appear on the surface, which, in this open expanse, is ruffled by a slight breeze.

A heavy, eddying swirl shows where a hungry bass has snapped at a wandering butterfly which ventured too near the surface, while over on the far side of the lagoon, in the shade of the overhanging trees, lies a basking alligator, his hideous head and armored back protruding above the surface.

Over the still air, from some deep recess of the watery areas, comes a three-syllabled, high-pitched, clarion note. Twice it rings out clearly, then silence; then again, much nearer. We lean forward, tense, expectant, waiting. A swift shadow passes over the boat, and we glance upward to see, over the edge of the tree line, a large black and white bird, traversing the open space above the lagoon in undulating, bounding flight. Again the loud, clear call rings out, almost in our ears, and the speeding form dips low over the water, swings up in a long curve, and comes to rest on a cypress across the way.

As he clings there, the flaming tuft of red upon the head glowing in the sun, he personifies the spirit of this

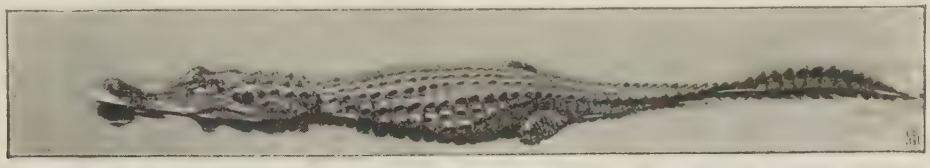
vast, gloomy region of trees and water. The alertness, freedom and untrammelled wildness of his bearing, the glistening contrasts of his plumage, the long stout ivory-hued bill, all combine to make a picture of such startling beauty that we wonder if it can be real. And well may we wonder whether it will last.

The ivory-billed woodpecker is almost a bird of the past. Utterly dependent upon heavily-timbered areas, it has been forced farther and farther in its retreat, to regions where forests yet exist, and which are all too few. In nearly all of the former range, which extended from middle United States southward, it has disappeared. The center of abundance was always in the Carolinas, Georgia and Florida, and in the remote swamps of these states it is making the last stand.

In South Carolina it has not been seen for years, but this does not mean that there are no birds left. The swamps have never been thoroughly explored, they are regions which entail great hardships, and no little danger in penetrating, and it is but reasonable to suppose that some few yet make these places their home. Shall some area be set aside for them to remain, or shall the lumberman drive them into oblivion?

Never fit for food, they should always have received protection, and the value of their work in ridding forests of injurious insects can hardly be estimated. They are hardy, powerful birds, and the never-ending search for their insect food must necessarily result in enormous numbers of borers and noxious grubs being destroyed. Who can tell what we owe them?

And what of their future? Will not all Nature lovers join in the great program of conservation, now being carried forward so ably? We can all create interest, we can throw our influence, our opinions, into the common cause, and if we all do this, the ivory-bill, as well as others so near their end, will not vanish from the earth while we are yet alive. But if we stand aside, if we keep our thoughts, our suggestions, and cooperation to ourselves, the end is not far off. Is it too late? Will our lazy inertia be overcome in time?



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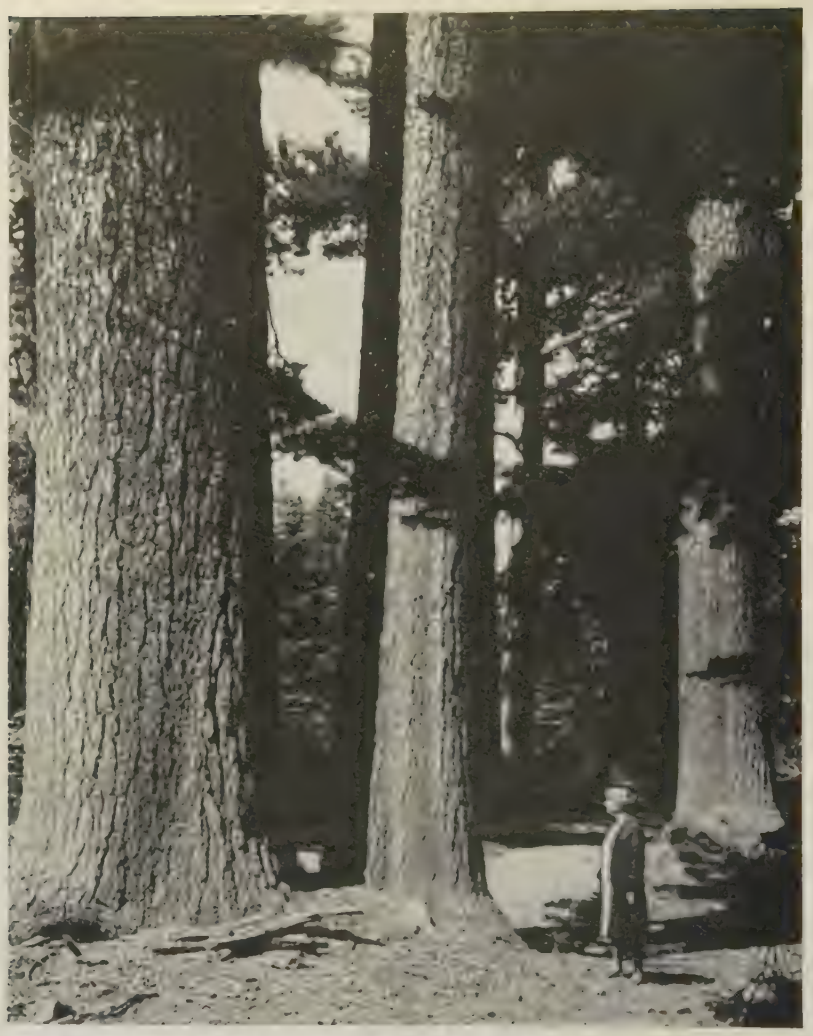
NEW GIANT GEYSER WHICH HAS JUST BEEN DISCOVERED IN THE FAIRY CREEK REGION OF YELLOWSTONE PARK

This new natural boiler has a crater of one hundred feet in diameter and shoots boiling water seventy-five to one hundred feet in the air twice a day. Each eruption is from three and one half to four hours in duration

KEEP THEM LIKE THIS

Mrs. C. C. Marshall, one of the most valiant fighters to prevent lumbering in Yosemite, is seen here gazing up at great sugar pines on private lands in Yosemite. Unless action is taken, these trees are marked for the axe



AFTER THE AXE AND SAW

Present logging plans, if carried out, will reduce 8500 acres of privately owned timber to this. Well-wishers of the national parks are trying to prevent the cutting. Will public opinion win? If vigorously expressed, it may

PHOTOS BY LLOYD THROUGH COURTESY OF MRS. C. C. MARSHALL

YOSEMITE—SAVED?

The House Takes The First Step

by Arthur Newton Pack

President, American Nature Association

H.R. NO. 15,089 is only another Interior Department supply bill—but it is the most important National Park measure in recent years.

While a lumber company on the West Coast made ready for an early attack of 8,500 acres of the finest Yosemite National Park timberlands, it passed the House of Representatives, to become the sole obstruction in the path of the cutting operations, and to furnish the key to the ever-troublesome problem of private lands in other parks.

The part of the bill which its originator, Congressman Louis C. Crampton of Michigan, in charge of the Interior Department appropriations, declared to be a necessary emergency measure if the leveling of the greatest section of sugar pine left on the West Coast is to be prevented, provided the immediate appropriation of $250,000 to meet half way a million dollar donation from private sources, and guarantees sums sufficient to save the threatened Yosemite tracts.

It further authorizes the Secretary of the Interior to make contracts totaling $2,750,000 when this amount is matched by private donations, and paves the way for condemnation proceedings, if necessary. Sufficient sums to save Yosemite are thus guaranteed and eventually $6,000,000, or more than enough to clear the parks, will, it is estimated, become available.

This section of the Interior Department measure which was introduced as an amendment by Mr. Crampton had yet, at the time of writing this article, to go to the Senate and the President. In view of the fact that the last hope of keeping Yosemite intact will have faded if the amendment is deleted from the bill, it is not expected that such a blow will be dealt by either Mr. Coolidge or the Upper House.

Due to the public broadcast of appeals by the American Nature Association the press and other forward-looking conservation groups, $1,000,000 from private sources has already been made available. If the appropriation is made, this sum will have been pledged in vain and the last chance to save Yosemite vanished.

The situation in Yosemite was brought to a head recently by the purchase by the Sugar Pine Lumber Company of Fresno, California, of the holdings of two other concerns. Its logging engines are already advancing upon the tracts bordering the tract; it is reliably reported that operations within the park would be in full swing, if not checked, by April. The timber along several miles of important arterial highways leading through the reserve will be taken; the path of the cutting will sweep around Tuolumne grove, leaving it, as the Merced Grove was left, an oasis in a desolate waste.

If, however, the step taken by the House is not retracted elsewhere, it is reasonable to hope that the blow will not be struck. The officials of the Sugar Pine Company are reported to be fair, public-interested gentlemen. Funds will be available to give them a fair price, and $1,000,000 of private money is waiting. It would not be fair to them to suspect that in the face of determined public opposition and the probability of Government purchase, they would slash an entrance to the park.

PHOTO BY UNDERWOOD

THE DEFENDER OF THE PARKS

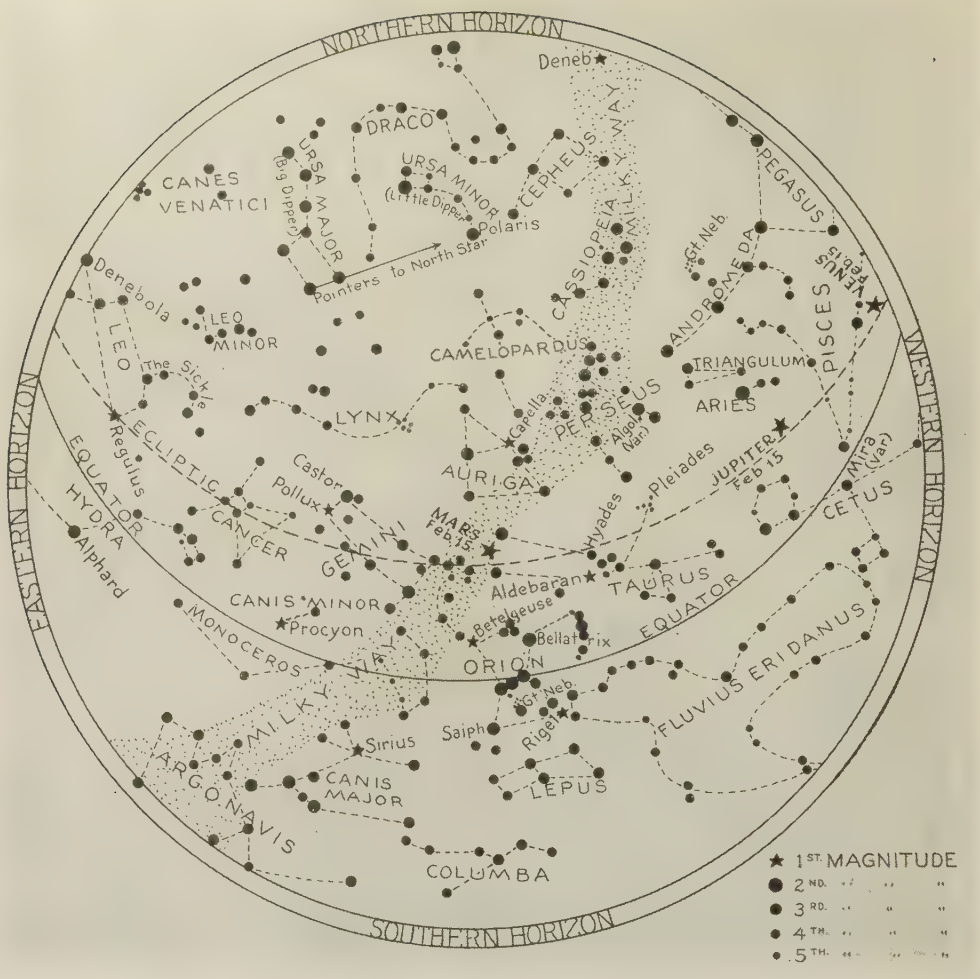
Rep. Louis C. Crampton of Michigan, and author of the amendment which, if enacted into law, will meet the Yosemite situation. Nature magazine has no interest in politics, but it cherishes the friends of conservation

The full force of public opinion may play a large part in speeding up the process of purchase; in fact, if the unexpected should happen, it might be the deciding factor in preventing the lumbering. No conservationist, Nature lover or well-wisher of the parks can rest now. He must make his opinion known to the world that Yosemite should not be touched.

Once the California park is attended to, the acquisition of private lands in other parks may be made in more leisurely fashion. They have their problems. Roads are being held up, the riff-raff of commercialism is invading domains supposedly set aside for the public. Mr. Crampton has assured the House that if the Government would commit itself to a policy of acquisition, private moneys would be forthcoming without trouble.

Conservationists and the friends of the parks can hardly praise too loudly the action of Mr. Crampton in the past few months. If Yosemite timber is saved—and the outlook is the most optimistic in months—he will have been a chief factor. His was the amendment which offered the block to lumbering; it was his clear description of condition that passed it unanimously in the House. His mind has been concentrated on planning a pathway to clear all the National Parks of privately owned lands for a number of years. His influence has always been for conservation measures. The American Nature Association cares not for politics, but it does desire to recognize friends of conservation.

Is Yosemite saved? By the time you read these words, the Senate and the President will have, it is reasonable to believe, done their parts. It remains only for the public to impress upon the not-unfriendly owners of the lumber company that, now funds are waiting, the 8,500 acres of Yosemite timber should not be cut.



TO USE, HOLD OVER THE HEAD WITH TOP TOWARD THE NORTH

This chart is made for February 1, 9 p. m.; February 15, 8 p. m.; February 28, 7 p. m.

Sister Venus, A Coy Planet

She Baffles Astronomers Who Seek to Solve Some of Her Mysteries

by Isabel M. Lewis

No object in the heavens, with the exception of the moon and an occasional comet or asteroid, comes as near to the earth as our sister planet Venus, and no planet presents the astronomer with more perplexing problems.

The rotation period of Mars, which determines the length of day and night on the planet, is known to a fraction of a second because the astronomer is able to observe definite markings on the surface of that planet and to note how long a time is required for them to be carried completely around by the planet's rotation on its axis. In the case of the planet Venus, however, conditions are entirely different. The surface of Venus is screened from our view by a dense atmospheric shell and it is very doubtful whether the actual surface of this planet is ever seen. Such markings as are observable from time to time are vague and indefinite, on the whole, and do not clearly show rotation.

Different estimates of the length of the planet's day vary from 225 days, the period of the planet's revolution around the sun, to a period of about 24 hours nearly equal to that of our own planet. The position of the planet's axis of rotation is also unknown, as it depends upon the observed direction of rotation of surface markings. Upon the tilt of this axis to the plane of the planet's orbit depends the nature of its seasons. The question of the habitability of a planet is closely connected with this problem of determining the length of the planet's day and the tilt of its axis with respect to the sun. Venus will not reveal these facts.

The dazzling brilliancy of the planet Venus, caused by the reflection of the sun's rays from its dense canopy of clouds, adds to the difficulties of observing this planet, especially against the black background of the night sky. For this reason the most satisfactory observations of the planet are made in the daytime when the contrast between the light of the planet and its background is greatly reduced.

Among the most interesting and valuable observations of Venus in recent years are those by Dr. F. E. Ross at the Mt. Wilson Observatory made at the very favorable elongation of the planet in June 1927, when its position in the heavens was very similar to what it is this month when it is once more at an eastern elongation or greatest distance east of the sun.

Dr. Ross obtained a series of photographs of the planet taken in ultra-violet light with the 60-inch and 100-inch telescopes. These photographs were taken on twenty-five nights in a nearly unbroken series. It was found that markings were always visible in the photographs taken in ultra-violet light while red and infra-red exposures showed no detail whatever. This behavior of the planet in light of different colors was interpreted to mean that the planet possesses a thin outer layer of cirrus clouds beneath which lies an exceedingly dense, yellowish atmospheric shell. The markings photographed, which consisted of brilliant white patches and dark areas which had, in many cases, a banded appearance, seemed to be wholly atmospheric disturbances, being dark or light depending upon the nature of the disturbance. In no case was there any indication that the actual surface of the planet was observed.

From rapid changes observed in the dark, banded markings of the planet it appeared that it could not possess a day nearly as long as its 225 period of revolution around the sun. This has been very generally believed, but it would mean that the planet would always keep the same side turned toward the sun. A rotation period of approximately thirty days seemed to Dr. Ross to be more in keeping with the results of his observations, as well as those obtained by other observers with the aid of the spectroscope.

If there were a violent circulation of air currents on Venus, due to extremes of temperature between its day and night sides, it is very probable that the atmosphere would be permanently dust-ladened. The decidedly yellowish tinge of the planet's atmosphere has been noted by many observers, and Dr. Ross assumes that this may be due to the presence of large quantities of dust in the atmosphere. If this is the correct explanation of the deep yellow color of the planet's atmosphere then the planet's surface cannot be almost completely covered with vast oceans, as some have suggested. Dust and fumes from active volcanoes might possibly be the cause of the yellowish tinge of the planet's dense atmospheric shell which appears to be even more dense than that of our own planet.

The study of the surfaces of the planets by means of light of different colors is a comparatively new feature of planetary observations, successfully employed by Dr. Wright at the Lick Observatory in the case of Mars. It now appears very promising in the far more puzzling case of Venus. It is expected that this method of attacking the problem of the rotation period of Venus will be continued and Venus is now in its most favorable position for such observations. The planet will reach its greatest eastern elongation, when its angular distance east of the sun will be nearly 47 degrees, on February 7. It will then resemble the phase of the moon at first quarter. That is, viewed through the telescope, it will appear like a half-moon. After that date it will become more and more crescent-shaped each day. In March, about thirty-six days before it is in inferior conjunction with the sun, it will attain its greatest brilliancy. It then resembles the moon at its five-day-old phase. During the entire month of February Venus will be in its most favorable position for observation.

So far we have written only of the facts concerning this planet that are perplexing and in doubt,—the length of the planet's day, the inclination of its axis to its orbit, which determines its seasons, and the nature of its atmospheric covering and its surface. It might be interesting, before leaving the subject of this planet, to mention a few of the facts that are positively known regarding it, such as its size, distance from the sun and period of revolution.

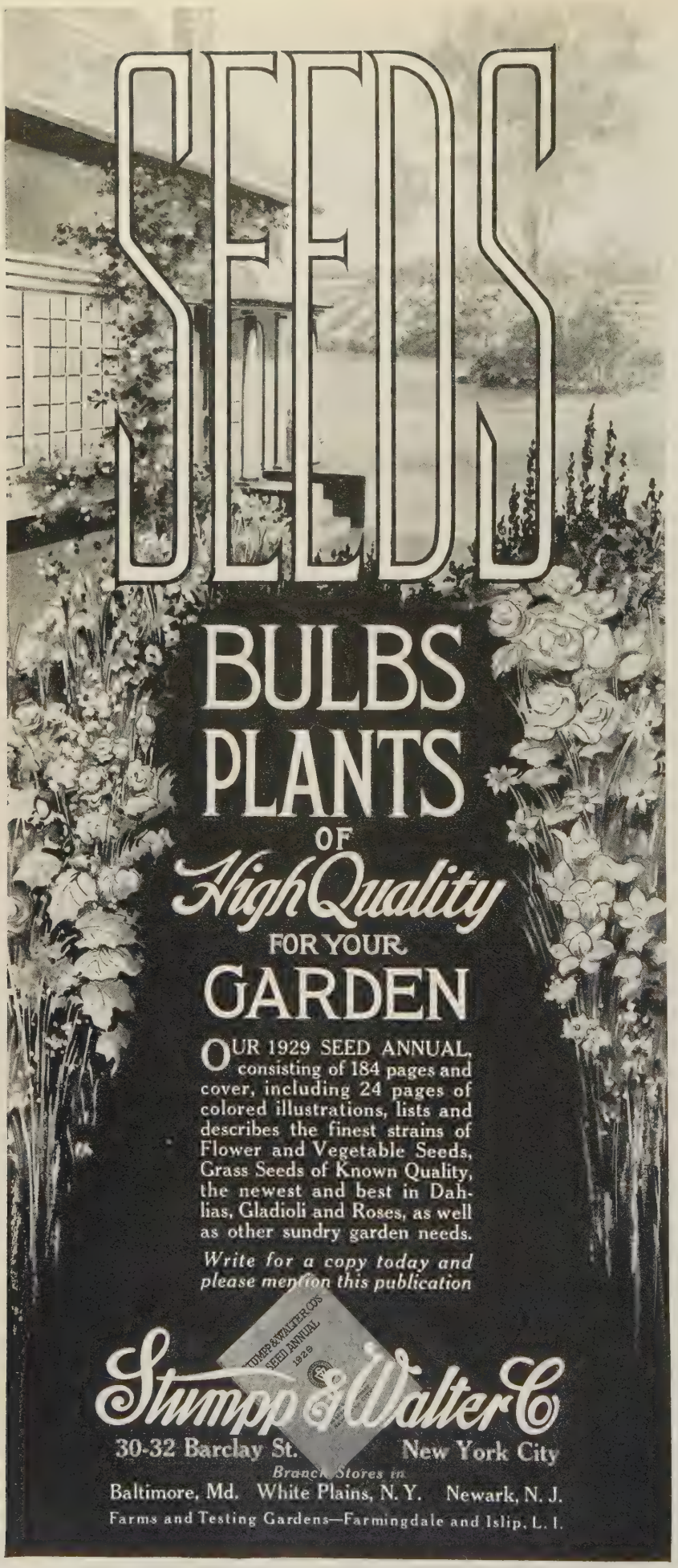
Venus is called the earth's sister planet because its diameter is about 7700 miles, only 300 miles less than that of the earth. Its surface is therefore about .95 that of the earth. Its density is about 4.85 times that of water and its surface gravity .85 that of the earth so that a boy weighing 100 lbs. on the earth would weigh 85 lbs. on Venus.

The orbit of Venus is more nearly circular than that of any other planet and is nearly a perfect circle. Its mean distance from the sun is 67,200,000 miles and its distance from the earth ranges from 25,700,000 miles at inferior conjunction, when it is between the earth and sun, to 160,100,000 miles at superior conjunction, when the sun lies directly between the planet and the earth. Its period of revolution around the sun is 225 of our days and its velocity in its orbit is 22 miles per second. It receives 1.9 times the amount of heat and light from the sun that the earth receives and would have a tropical climate were it not for the screening effect of its dense cloud-filled atmosphere. Its atmosphere is probably twice as dense as that of the earth and it is possible that the planet may be inhabited. It has no satellite so far as is known. No moon of any appreciable size could escape detection. It is expected that the problem of the length of the planet's day and the position of its axis of rotation, and possibly also the nature of its atmospheric envelope may be settled in the not too distant future.

In addition to Venus, which will be visible in the western sky for more than three hours after sunset this month, both Mars and Jupiter will be found in the evening sky. Mars is now in Taurus and will be found about midway between the horns of Taurus on February 15. Jupiter is in the western sky in Aries and next to Venus is the most brilliant stellar object in view.

Saturn is visible in the southeastern sky in Ophiuchus before sunrise. Mercury will be invisible most of the month but may possibly be glimpsed low in the

(*Continued on page* **120**)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SISTER VENUS

(Continued from page 119)

southeast in Capricornus in the morning twilight the last two or three days in February as it reaches its greatest distance west of the sun on March 5.

Orion is now in fine position for evening observation, nearly due south about nine P. M. the first of the month. Winter evening skies are the most brilliant of all the year and the most conspicuous groups are now on or near the meridian in the early evening. Directly north of Orion lie the horns of Taurus. The brilliant white star, Beta Tauri, the brighter of the two stars that mark the horns, forms a pentagon with the four brightest stars in Auriga. One of these four stars is the brilliant Capella, one of the finest stars in the winter sky, easily identified by the group of three faint stars known as Haedi, or The Kids, close by on the southwest. Another brilliant group is Gemini, northeast of Orion and southeast of Auriga, which contains not only the brilliant Castor and Pollux but a number of bright stars in addition. South of Gemini is the Little Dog Star, Procyon, while in the southeast nearly in line with the three stars in the Belt of Orion we find the magnificent Dog Star, Sirius, in the constellation of Canis Major, The Greater Dog. Jupiter far over in the west and Mars in Taurus add exceptional splendor to the evening sky this month while long after sunset the unrivalled splendor of Venus claims the attention of all as it sinks slowly toward the southwestern horizon. To the unusual beauty of the February skies is added the blended radiance of the millions upon millions of faint stars in the Milky Way which now arches high across the heavens from Argo Navis on the southeastern horizon through Auriga in the zenith and Perseus and Cassiopeia in the northwest to Cepheus and the northern horizon.

Albino Birds

Perhaps Albino birds are not as rare as is generally thought, and there is lacking only keener eyes to note them. This is the conclusion that may be drawn from the experiences of Mrs. H. P. Cook of Anderson, Indiana, who has met a number of these strange creatures, mainly robins and English sparrows, during the past few years. She reports an all-white robin nesting in Dunreith, Indiana, and a number of partial albino English sparrows that played around her yard in the fall of 1927. Some had only white on the tail, and others were so plainly marked that their lack of color was noticeable when they flew. At Chesterfield, Indiana, she found a robin with a white and chestnut-colored breast and at her home was visited by a spotted redbreast. Among her strangest finds was a black and white crow that fed in a field with his black companions, quite unconcerned with his color differences. All of which reminds us that a half-white robin was seen last spring in a yard near the office of the American Nature Association, feeding with a few conventionally clad companions.

The Master Builder—Nature!

OF late much progress has been made in understanding such plant materials as nature employs. We have learned, for instance, that Rhododendrons and Azaleas thrive in the sun as well as shade, which Ferns and Wild-flowers do best in specific situations. Among the first wildlings to go into the ground are those charming first flowers of Spring that defy Jack Frost and frequently appear before all the snow is gone. Here are a few: –

TRILLIUM GRANDIFLORUM
(Three-Leaved Night-Shade)

The tuber-like roots bear three thrifty leaves arranged in whorl fashion, topped by a chaste, white flower. We offer seven delightfully different kinds. Among these, T. grandiflorum is perhaps the prettiest.

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The lovely native Virginia Cowslip, with drooping panicles of bluish white flowers. Prefers well-drained sunny slopes but does equally well in moist, shady situations.

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(The Showy Lady's Slipper)

This native Orchid adds a touch of beauty to any shady nook. Prefers a fairly moist bed of peat or leaf mold.

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Hepatica acutiloba. Large clumps are available of this variety, which can be depended upon to produce a lively display of white, pink or purple flowers.

H. triloba. Among the earliest woodland gems, bearing pink and dark purple flowers.

Prices: Either variety, 10 for $1.50; 100 for $12.00

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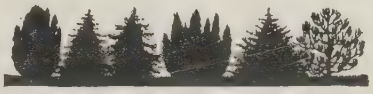

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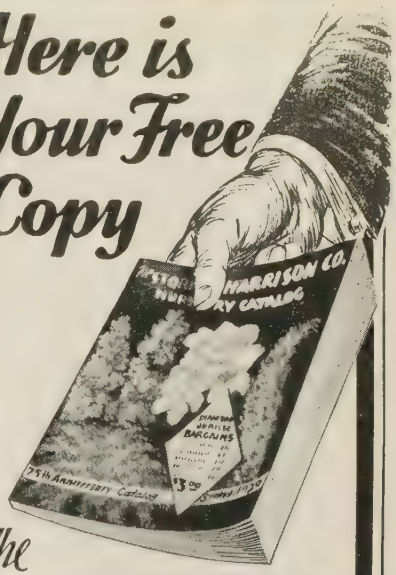

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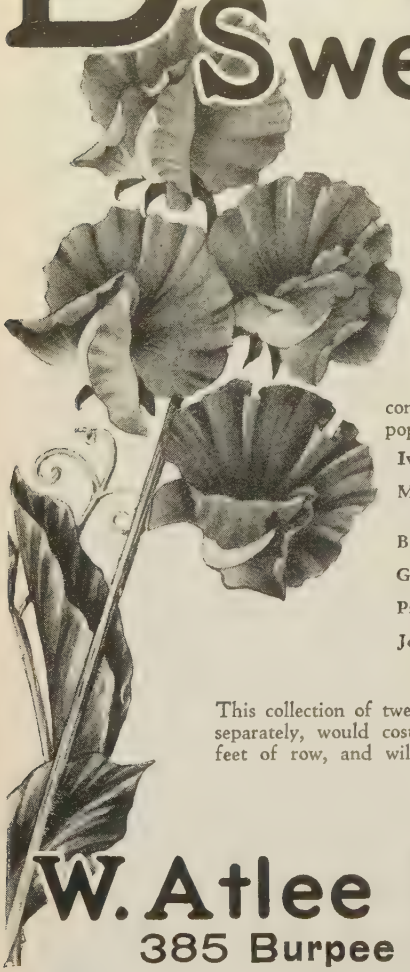

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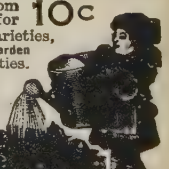

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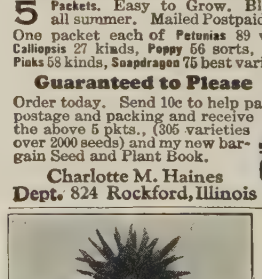

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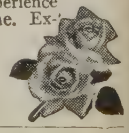

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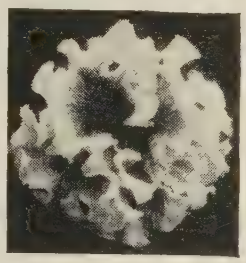

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Helps and Hints
FOR HOME AND GARDEN

Those plants that bloom on last year's wood are not pruned until after the flowering, as winter pruning would remove many buds. This group includes among the shrubs dogwood, forsythia, hydrangea hortensis, lilac, mock orange, rhododendron, climbing varieties of roses, bridal wreath, spirea thunbergi, spirea vanhoutei, wistaria and weigelia. The summer should roll around before you attend to them.

* * *

By the end of the month, the inside of your house, along the window sills and everywhere that the sun can penetrate will be filled with small pots of earth, window boxes, or vases containing branches of forsythia, Japan quince or pussy willow. At least, this should be the condition, if you are an ardent gardener; and if not, you should be conscience-stricken. Sweet peas and melons will thrive in indoor pots now, even in the colder regions, and moon flowers and other flowering vines such as cobaeas and thunbergias may also be placed in the indoor gallery at this time. All your available supply of vases should be filled with early-leaving branches, as a prelude for the coming season. Lily-of-the-valley pips may be forced into flower in about three weeks or so, if planted in peat moss. Be sure and keep newly-sown seeds quite moist, and guard against keeping the air of your house too dry. Your green-clothed visitors will need a lot of water vapor.

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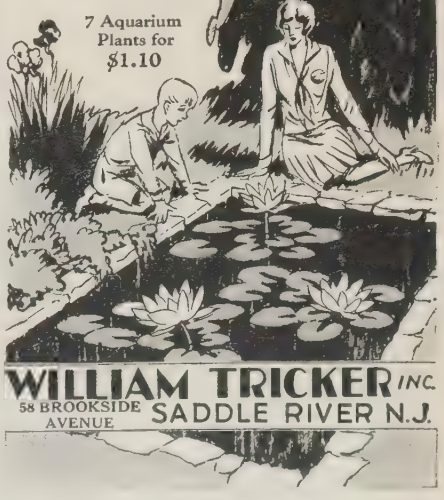

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Yes—the new Q. R. S. 35 mm. Still Kamra with Q. R. S. Kamra Lens Kit of supplementary lenses and Kamra Rack. In photographing insects, leaves, small flowers, butterflies, printed illustrations, small photographs, fabrics, etc.—objects that are flat or without more than a quarter of an inch in depth or thickness,—the 6-inch supplementary lens is constructed to produce the most exacting results. It is also possible to reproduce objects of a depth or thickness of 1½ inches. Positive film prints made from Kamra negatives will enlarge in screen projection to a width of from 3 to 14 feet in clear detail. As for illustration a reproduction of the common house fly made with Kamra Lens No. 1 will magnify when projected with the Q. R. S. Still Projector as large as a good size kitten, etc. The new Q. R. S. Combination Movie Camera and Projector is unique, as only one mechanism is used for both taking and projecting the picture. It is for this reason that the very low price is made possible. This camera uses standard Eastman 16 mm. film. It is simple; a child can operate it. Plug into your electric light socket for projecting pictures, motor operates on either alternating or direct current.

* * *

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Instructions for building, planting and taking care of pools of all sizes in our 1929 free catalog. Beautiful illustrations, some in natural colors. Over 100 rare lilies and other water plants. Includes list of collections for as low as $3.00. All prices unusually reasonable. Collections sent postpaid. Take advantage of this offer.

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Plows
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Cultivates
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Select Stock 2 to 3 ft. 25 for $6.00, per 100 $20.00. Prompt Shipment Cash; please ask for price list.

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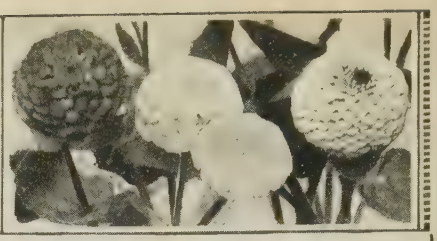

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Pompon Zinnias
Something new for your garden

These remarkable little Zinnias have round, double flowers like Button Chrysanthemums. While the slender stems make them especially attractive for bouquets, the low-growing, compact plants produce a gorgeous display of brilliant unusual colors along the edge of the garden. They are sure to bloom profusely from early summer until frost from seed sown out doors in spring.

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Be Sure to ask for our Seed Book today—
It's different. It shows the unusual varieties that will make your garden distinctive and tells you what, when and how to plant your favorite flowers for the best all-season results, with continuous bloom from spring until frost.

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Harris Seeds

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Four Great Dahlias
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KATHLEEN NORRIS—Glorious pink. Won "First" for best flower exhibited at four leading Shows 1928. **Plants only, $7.50**
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"Growers and originators of Gold Medal Dahlias."

TEN CACTI

Blooming size All different
Postpaid for $2.50
Table garden size $2.00
JAMES ALLAN
Mountain Park New Mexico

Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature

QUESTION: *Will you please give me directions for making a "rose-jar"?—C. B. W.*

ANSWER: The flowers should be gathered in early morning, and put on a table in an airy place so that the dew can evaporate. Then put them in a glass jar, and sprinkle salt over each half-inch layer. When enough flowers have been collected, let them stand for ten days, then fill the rose jar with alternate layers of the "rose stock", and a mixture of spices. A suitable mixture may be prepared by stirring together ¼ oz. mace, ½ oz. allspice and cloves (all coarsely ground or pounded), ¼ oz. cinnamon, 1 oz. powdered orris root, ¼ oz. grated nutmeg, and ¼ lb. dried lavender flowers. A few drops each of several essential oils,—rose, geranium, bitter almond, or orange flower,—improves the mixture. Pour over the whole, 1 oz. of your favorite toilet water. Various sweet flowers, such as heliotrope, may be added. Open the jar for half an hour each day to scent the room.

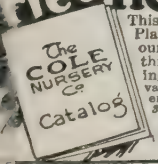
QUESTION: *Do worms rain down? A perfectly new wooden barrel is placed outside under an eavespout before a shower to catch rain water. Immediately after the shower earth worms are found in the water.—H. J.*

ANSWER: There are at least two explanations possible. In many gutters some earth accumulates and in these the eggs of worms evidently sometimes gain lodgment, either being blown there by the wind, or being carried there by birds. Worms, however, do sometimes rain down, as there are well authenticated instances of their being caught in the brim of a person's hat, away from buildings, during a rain. This phenomenon results from the worms being picked up by the wind, and then happening to fall in that particular place. Small fishes and frogs have also been known to "rain down", owing to the same cause.

Winter Sports

The fame and glory that has been gained for St. Moritz, Quebec City, and other famous winter resorts will be dimmed if the plans of E. Des Baillets, recently appointed winter sports director for Yosemite National Park, and former organizer of the well-known Sno-Birds of Lake Placid, New York, are fulfilled. A new outdoor rink of twenty-four hundred square feet has been built. Four expert ski instructors have been brought down from Canada, and horses for ski-joring have been added. A half-mile toboggan slide has been improved. Mr. Des Baillets is negotiating to get a dogteam.

Free HOW TO PLANT



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Dependable and Delightful-Odd-New FLOWERS

Hollyhock-Delphinium is illustrated above

Gladiolus Giant Special Mixed
100 for Postpaid **$3.25**

DELPHINIUM: "Blackmore and Langdon's Giants." One of the finest Delphiniums in cultivation. A giant English, prize-winning strain. Spikes, six to seven feet tall. Packet **50c.**

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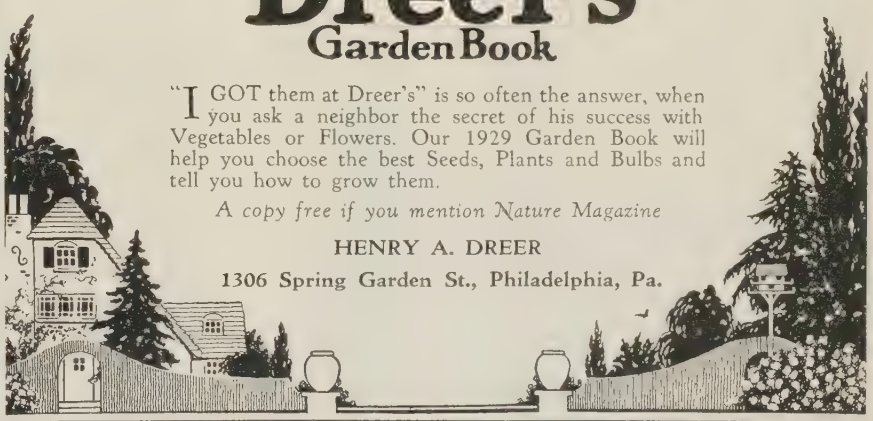

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A copy free if you mention Nature Magazine

HENRY A. DREER
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are not difficult. The pool and the rockery add an indefinable charm to the garden; and are not necessarily expensive. The two form a combination of bewitching beauty. If space is limited a water lily may be grown in a tub. This book tells how to make and what to grow in them. HARDY PERENNIALS are the backbone of the garden; once planted they grow every year without further planting. They include Peonies, Iris, Lilies, Chrysanthemums, Delphiniums, Phlox, Daisies, etc. This book lists and describes nearly 300 hardy perennials and more than 250 flowers that are annual or biennial. Also gives correct pronunciations of nearly every flower grown. It contains special articles on Peonies, Iris, Gladiolus, Lilies, Gladiolus Bubblets, and Shrubs. Tells how to prepare the soil, fertilize, plant, cultivate, mulch, water, hybridize and how to harvest and store bulbs.

FLOWERS FOR THE BEGINNER *is a helpful article in which is listed and described those plants easiest grown from seed and which make good cut flowers.*

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is a 200-page book, beautifully bound in cloth, and written by E. H. and R. T. Wilson who have had more than thirty years' experience as growers of fine flowers. The book will save many times its price; also makes a fine and useful present for a flower-loving friend. Price prepaid $2.50.

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Order now. We ship at planting time.

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LUTHER BURBANK
Master Plant Breeder.

Seed discovered by us, in Burbank's famous "TREASURE CHEST," his legacy to Stark Bro's, the one organization he selected to **exclusively** carry on and perpetuate his life work. NEW DISCOVERED flowers of exquisite colors and unique forms. Will make your garden delightfully different this year! Learn about the new BURBANK CREATIONS—Send now for **FREE** 1929 Catalog—all the New Burbank Flowers & Vegetables. Salesmen Wanted also.

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Something different—something new—is the red-leaved Japanese Barberry recently offered to discriminating home owners. The rich, lustrous, bronzy red of its foliage, which becomes more brilliant throughout the summer, changes to vivid orange, scarlet and red shades in the fall.

This distinctive shrub resembles in color the beautiful red-leaved Japanese Maple. It has proven itself especially well adapted to mixing in shrubbery borders or for clumps on lawn.

SPECIAL OFFER

If you order direct from this ad you can benefit from the following special low **postpaid** prices on this wonderful new shrub.

9"-12" Bushy Plants 65c each 4 for **$2.00**
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Also Japanese Azalea (Mollis) a beautiful hardy shrub, flowers brilliant flame colored.

10"-12" Thrifty vigorous plants 65c each 4 for **$2.00**
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No two alike. All labeled and selected to cover the entire Gladiolus color range. Many new and rare varieties. 3 collections for $5.50. Write for catalogue describing over 100 varieties and other collections.

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Naming Violators

The unsavory light of publicity will be shed on game law violators in Wisconsin, as a result of the Conservation Commission's recent determination to publish each month the names, addresses, occupations, previous records and organization memberships of those perpetrating illegal acts against the wild life of the state. The data will be available to any wishing to procure it. It will be interesting to see whether or not hunters are ashamed of violating the law.

Banding Wild Fowl

Sportsmen in all parts of the country are being asked by the Bureau of Biological Survey of the U. S. Department of Agriculture to report to it all banded birds they see, giving the number on the band, the date and place of capture. The Government will supply to the person rendering the report the banding record of their bird. More than 30,000 ducks and geese have been banded during the last few years, by about twenty banding stations in different parts of the country, and valuable results have already been obtained through the cooperation of sportsmen who have reported banded birds killed.

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Sample Collections:

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All good plants, 1-ft. size, balled and burlapped, by express your expense.

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Price list sent on request.

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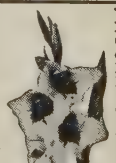

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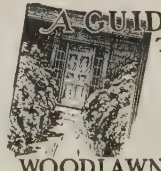

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California Owls

A highly instructive pamphlet on the owls of the Golden State has recently come from the pen of Donald D. McLean, field naturalist of the Division of Fish and Game, and a life-long student of these California birds. It is in reality a plea for the protection of owls, and outlines with logical force the economic worth of the creatures as rodent destroyers. Copies of the pamphlet may be obtained from the Division of Fish and Game, 510 Russ Building, San Francisco.

L. C. Page Presents

A glorified guide book is perhaps the best description that can be given to *Maine of the Sea and Pines* by Nathan Haskell Dole and Irwin Leslie Gordon, published by L. C. Page and Company of Boston. This volume is one in the *See America First* series being brought out by this publisher, and, like its companion volumes, is beautifully presented pictorially, and interestingly and completely prepared textually. This book sells for six dollars and belongs in the library of every lover of Maine.

Perhaps the finest group of travel books published is that which L. C. Page lists as its "Spell" series, and a new addition to this group is *The Spell of Ireland,* written by Archie Bell and listed at $3.75. Mr. Bell has presented a charming story of travel in Erin and woven into his text the things one would wish to see without any touch of the usual encyclopedic forms.

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and now a

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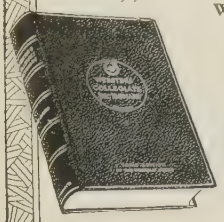

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The L. Street Brownies of Boston, Mass., who brave the rigors of the New England winter to swim in the harbor and the thick-coated polar bear who takes to Arctic waters to catch its breakfast have a rival in bravery in the person of a young robin, whom Chief Ranger Brooks of Grand Canyon National Park watched break the ice on his bird-bath one frosty morning, to take his usual dip. Not only did the bird show initiative in using his feet to get at the water, but he seemed to show animation both at getting in and getting out.

A Pledge to Preserve

The thirty-one members of the Nature Club of the Thomas Jefferson Junior High School at Charleston, West Virginia, have taken a pledge that more students and adults could take, Miss Florence E. Dick, the club advisor, reports. They have agreed to "preserve wild flowers and trees; leave a clean camp and dead fire; resent the unsightly roadside billboards; treat the Out-of-Doors with affection." This West Virginia group is to be congratulated on its action.

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(Continued from page 104)

green aphis to appear, it is easy to protect the vines by thorough spraying with "Black Leaf 40". The red spiders, so fond of attacking sweet peas under glass, seldom have a chance of injuring our plants if we keep the beds well watered and the vines sprayed. Mosaic is a disease likely to prey upon the vines after aphids have been present, but when the vines have reached about one foot in height they are seldom thus troubled.

In prolonging the flowering season, which we surely want to do with so lovely a flower, do not allow the seed pods to form. And how good it is to know that the more sweet peas we cut the more there will be ready for our scissors another day.

After the vines have started to flower, superphosphates are good to apply,—also nitrate of potash or sulphate of ammonia. Half an ounce dissolved in a gallon of water is sufficient.

In our country there are two types of this flower, the early or winter-flowering and the summer-flowering. In very hot climates the winter-flowering type is appropriate. It is best for fall sowing in the South, while the summer-flowering class is excellent in the North.

The following early-flowering varieties can be depended upon: Daybreak, cream-pink; True Blue, a rich mid-blue; Rose Charm, a large-flowering and beautifully waved bright rose; Harmony, the best clear lavender yet introduced; and Glitters, with flowers of enormous size of a glittering fiery orange.

The summer-flowering clan boasts of King White, the finest white-seeded pure white; Miss Philadelphia, a distinct shade of pink; Matchless, the best of the creamy-yellow sorts; and the Cardinal, a poppy-scarlet, to say nothing of countless others. Any seed firm will supply ample descriptive lists for the asking.

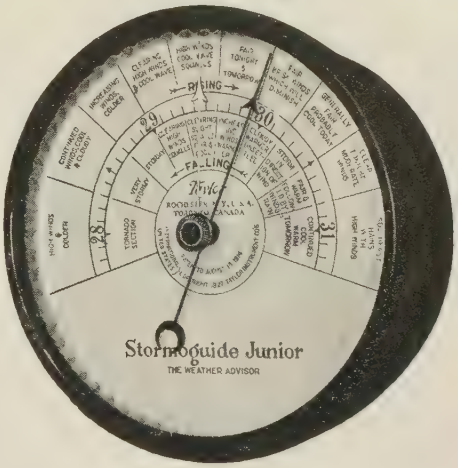
In this machine age of noise and excitement, we are now experiencing the inevitable reaction—a turning to the outdoors, to gardens. Fortunately, we have come to think of our gardens as places in which to live, where we may get in touch with the real values of life and enjoy the unsophisticated company of flowers. And what garden could be completely satisfying without the radiant presence of sweet peas?

Edison Continues

Thomas Edison is not through. His eighty-second birthday falls during this month, but still the "wizard of Menlo Park" continues at the work-bench, the premier moulder of the forces of Nature. Last October, on the fiftieth anniversary of the birth of the incandescent lamp, the Secretary of the Treasury, Andrew J. Mellon, presented him with the Congressional Medal, while a nation listened at its radios to this tribute of a grateful nation to its greatest inventive force. Mr. Edison has worked at first hand with Nature; but he has gone beyond a mere survey of it—he sought out its laws. Nature Magazine wishes many more years of useful endeavor to this creator, and increasing satisfaction in his achievements. He has been one of the few men to see his dreams come true.

Taylor Stormoguide

does not control the weather but forecasts the kind of weather to prevail 12 to 24 hours hence and does so with high average accuracy; enables you to plan your work, or your pleasures, to organize every phase of your everyday life so you can take advantage of all kinds of weather, good or bad.



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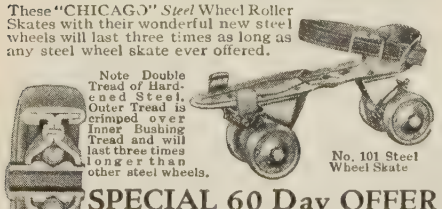

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NATURE NEWS AND VIEWS

Seton on Wild Life Destruction

That master-writer and life-long student of animals, Ernest Thompson Seton, in his monumental work on the lives of our game animals, in sadness at the swift passing of our once magnificent heritage, alludes to one of the outstanding causes in the following significant language:

"I have before me now the current issue of a well-known sporting magazine. It consists of eight articles (fourteen pages) on how to destroy game, one article (two pages) on how to preserve ducks; two articles totalling five pages, on camping. Thirty-two pages are devoted to announcing new devices for the destruction of game and wild life, including fifty advertisements of various dogs trained to kill or help kill game with new and increased effectiveness. This publication is an accurate index of the thought and methods of to-day.

"One hundred years ago the balance turned. Then the total of man's destruction became greater than the reproductive power of the game animals. And yet, we have yearly added to that destruction, and foolishly we wonder why the wild life goes so fast. Now is the time for a decision. We must either abolish repeating weapons, high-power guns, steel traps, poison, dogs, automobiles, and aeroplanes in all pursuit of game and harmless creatures, or accept the desolation of our woods and wilds, that at the present rate will certainly be complete within a few years."

No More Billboards

The anti-billboard enthusiasts scored another victory in Georgia during the past few months, when the State highway board prohibited the placing of advertising signs on rights of way, and instructed all state employees not to cut trees needlessly. It also urged that "the beautifying of the highways be encouraged by the planting of trees and the clearing away of all objectional and unsightly objects". Slowly but surely Outdoor Good Manners are being inculcated into the minds of the people of the country, and the desire to keep roadside scenery natural and beautiful becomes stronger.

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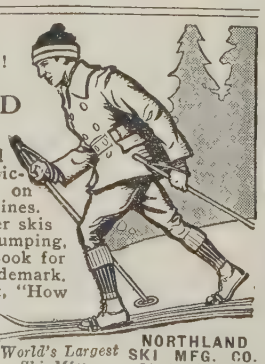

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Indiana Hikers

Some years ago William Herschell, Nature poet and writer, composed a famous poem, "Ain't God Good to Indiana". Ever since that time Hoosiers have been travelling over the mountains, valleys and woodlands in an attempt to ascertain just how good God has been to their state. One of the organizations leading in the research has been the Nature Study Club of Indiana, begun by the late William Watson Woollen in 1907. Mr. Herschell recounts in the Indianapolis News how this club investigates every corner of the region, in bus or on foot, not merely hitting the high spots, but actually getting in among the flowers and birds and trees to analyze the beauties of the State. The club bands birds, plants, trees, studies wild flowers, and in all is a rollicking group, according to Mr. Herschell, who adds, "Pessimists need not apply".

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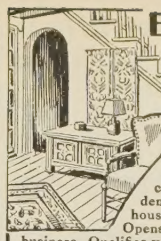

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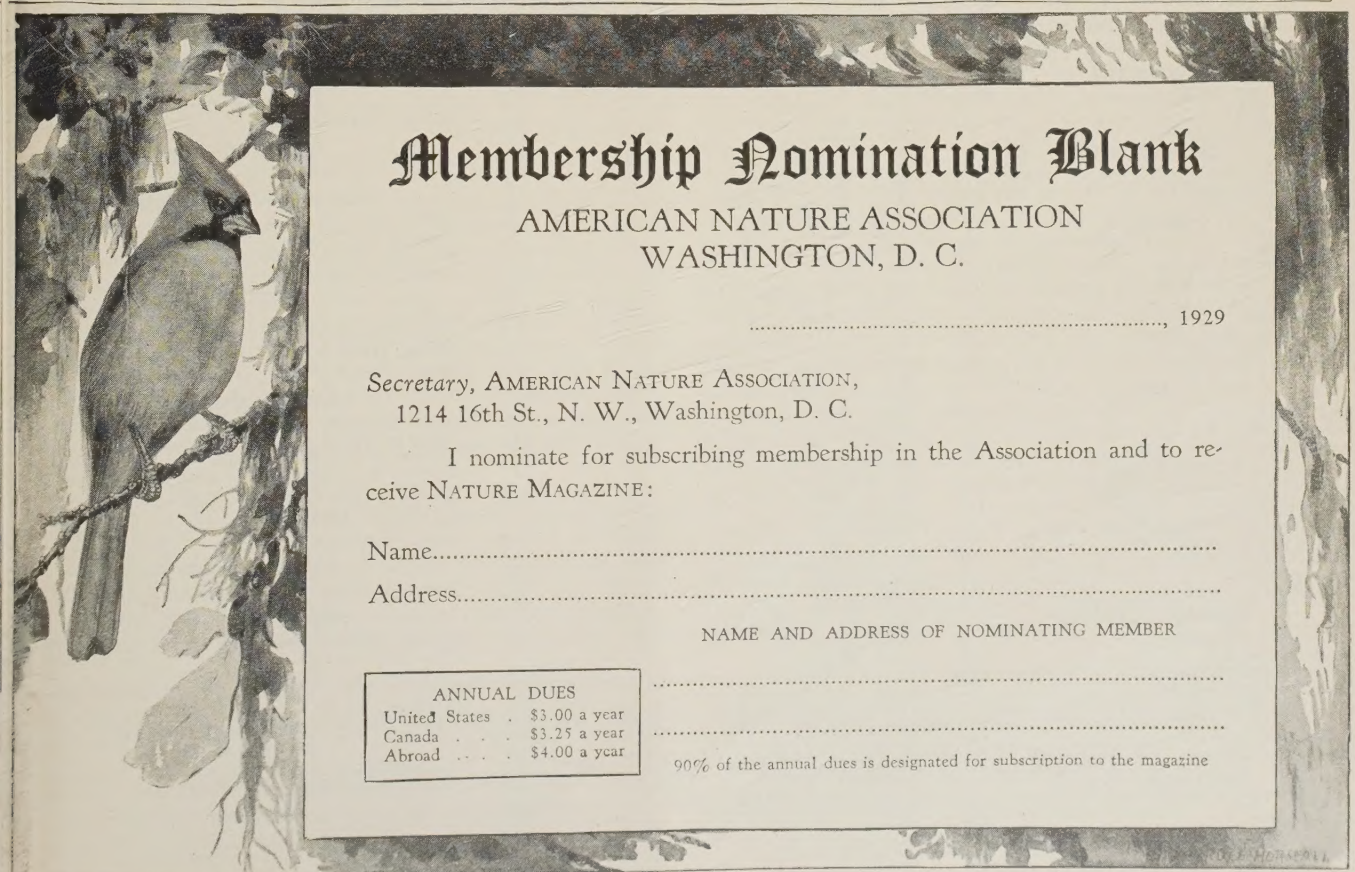

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The American Tree Association stands for a constructive policy of forest protection and extension, to increase appreciation of forests as natural resources essential to the sound economic future of the country.

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Educational Director

ANOTHER good friend of forestry, Herbert Hoover, will take the oath of office as President of the United States on March 4. That we are to have a forestry minded president is important. The year 1929 will be a big one in forestry history. The Minnesota Reforestation Commission has just reported a comprehensive forestry program for the state and a commission in New York State has been making a study of the conditions there.

Nearly all the State Legislatures are in session. Only nine met in 1928 and they passed relatively little legislation of any importance to forestry. The following states will not meet in 1929: Louisiana, Mississippi, Alabama, Virginia and Kentucky. Several of the States have shifted to bi-annual sessions and there is every reason to believe that there will be important forestry legislation. So it will be seen that forestry will be to the fore.

Mr. Hoover approaches forestry as he has approached many other problems—essentially as an engineer. A firm believer in the statement once made by President Coolidge that "a tree saved is a tree grown," Mr. Hoover as Secretary of Commerce has actively interested himself in the problem of saving trees by avoiding waste. He feels that with the passing of abundant and cheap timber supplies it is high time that extravagant national habits should also pass. So he has worked steadily and successfully to cut down avoidable waste in wood use.

Realizing that we are only using about one-third of the wood in every tree we cut, Mr. Hoover has pointed out that to decrease this drain on our timber resources would be a strong impetus toward commercial reforestation for the simple reason that timber crops would then increase in value. Increased value of trees means greater incentive to plant them. To his mind one of the great practical answers to the question of safeguarding the future of our forest resources is through closer wood utilization. His is the broad conception of an attack to eliminate waste and to obtain greater efficiency from the existing products of the forest.

"The welfare of the nation is to a large extent dependent on the perpetuation of our forests." In this clear-cut statement Mr. Hoover has placed himself on record as realizing the vital character of our forest problem. And his hope of perpetuating these forests lies, in large degree, with the great timberland owners of the United States. In private forestry Mr. Hoover sees one of the great tools toward securing a perpetual supply of timber for the nation.

Prominently identified with Mr. Hoover's work for bettering conditions in the lumber industry and reducing wastage in our forests was the creation of "The National Committee on Wood Utilization" established in 1925. The aim of this committee has been to bring about a wiser and more efficient use of wood and other forest products as a means of advancing commercial reforestation. Of this committee Secretary Hoover was chairman. The membership consisted of about one hundred and forty manufacturers, distributors and consumers of forest products. It has included special study in the adoption of improved machinery, improved methods of handling and storing, proper use of wood and paper grading.

A thorough believer in educational methods, Mr. Hoover has seen to it that suggestions for the elimination of waste and for better practice in all branches of the lumber industry should be widely distributed to the public.

"A tree saved is a tree grown." That in a nutshell is the very essence of Mr. Hoover's attitude toward forestry today. He believes in planting, he believes in reforestation, he believes in the protection of our forests against disease and fire. All these things he knows have distinct places in our national forest economy.

Mr. Hoover has been visiting our neighbors to the south. This visit has turned the thought of millions to the resources of these countries. With the situation what it is in this country foresters have been looking in that direction for some time. Some tropical woods, of course, were well known, and had been well known for centuries. Mahogany, Spanish cedar, rosewood—these precious woods the whole world knew and prized, but beyond them were literally thousands of species of tropical tree growth all massed together under the convenient name of Jungle.

Last year, to get a working knowledge of the extent of these forests, and of their timbers, the Charles Lathrop Pack Forestry Trust undertook a three-year field survey of Latin America in cooperation with the Tropical Plant Research Foundation. It is fortunate that the next president has visited the South American countries for he will be sympathetic to any reports that treat of their forest or any other resources. So we are assured that when he takes the oath of office, forestry will have another loyal and sympathetic friend in the White House.

The Forestry Movement

SPRINGFIELD UNION.—*The movement for reforestation has spread literally from Maine to Oregon. Even in the Pacific Northwest, where a great part of our standing timber now is, the importance of planting trees while adopting concerted measures for reduction of forest waste is finding a substantial measure of recognition. The rate at which our forest wealth has been consumed, from coast to coast, is appalling. There is only one course to pursue, if our prosperity as a nation is to endure, and that is to reverse our policies and conserve the forest wealth that was formerly held in disregard.*

"The welfare of the Nation is to a large extent dependent on the perpetuation of our forests."—HERBERT HOOVER.

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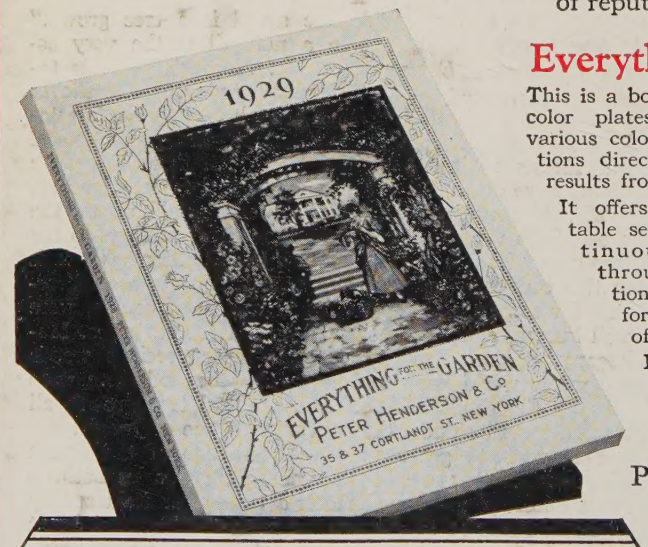

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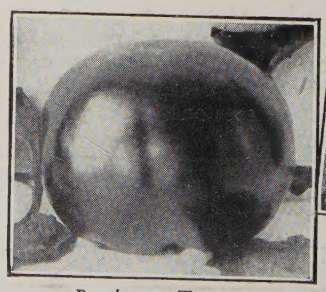

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